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PAPER TRADE JOURNAL

MAY 18, 1944

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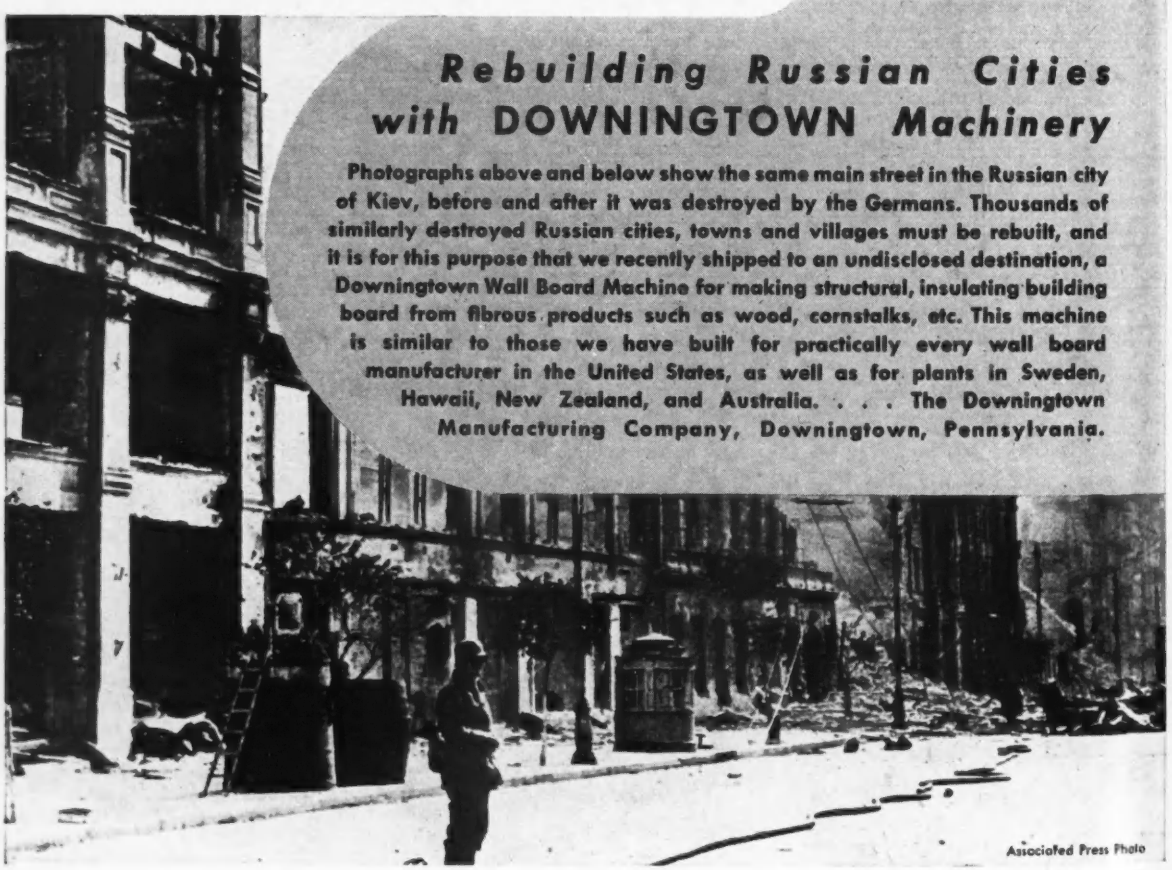

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Increases Pulpwood Prices in Some Areas

OPA Sets Higher Ceilings On Peeled Poplar and White Birch In Three States—Regular 100-Inch Poplar Wood Now $11.50 A Cord — Changes Also Made In Connection With Dealer Allowances.

[FROM OUR REGULAR CORRESPONDENT]

WASHINGTON, D. C., May 15, 1944—Increases of 50 cents per cord in the ceiling prices for two species of pulpwood produced in Wisconsin, Michigan and Minnesota were announced by the Office of Price Administration today. The two species are peeled poplar and peeled white birch.

At the same time, ceiling increases were granted on spruce and balsam pulpwood produced in 50 inch lengths in one county of this Lake States Region. That is Cook County, Minnesota. The increases are 80 to 90 cents a cord on Rough Balsam and Spruce and $1. to $1.10 a cord on peeled balsam and spruce.

Increases Effective May 12

These increases, which are effective May 12, 1944, will be offset by savings to the buyers of this pulpwood in handling and transportation cost. The buyers are pulp and paper mills. These buyers were consulted by OPA before a decision was reached on the increases. The mills unanimously agreed to pay the higher prices. There is no change in the ceilings of products sold by the mills. No prices at retail are involved by today's action.

OPA said that it had granted the ceiling increases on peeled poplar on the recommendation of the War Production Board to encourage the production of this species of wood in peeled condition. This action will facilitate the achievement of a 1944 production goal of 200,000 cords of peeled poplar pulpwood in this region, as set by the inustry and the War Production Board.

White birch has been similarly increased to maintain the established differential between poplar and birch. The increases for Cook County, Minnesota, production of 50-inch spruce and balsam were granted at the request of buyers of this pulpwood to compensate producers for the additional solid wood contained in a cord of shorter lengths.

New Ceilings For Peeled Birch

The new ceilings for peeled poplar and peeled birch, applicable to the three states of the region, are, per cord, $11.50 for the regular 100-inch wood poplar; $13 for poplar in cords of 147 cubic feet in 55-inch lengths; and $11.50 for white birch, regular 100-inch wood.

The new ceilings for spruce and balsam, applicable to Cook County, Minnesota, per cord of 133 cubic feet, in 50-inch lengths, are: $15.90 for rough spruce; $13.80 for rough balsam; $19.10 for peeled spruce; and $17 for peeled balsam.

Two changes also were made in connection with allowances.

To qualify for the $1 per cord dealer allowance, a dealer is permitted to include excelsior bolts, box bolts and insulation short logs in computing the 8,000 cord qualification required before this allowance can be paid.

The previous requirement that to qualify for the dealer's $1 per cord allowance or the trader's 50 cents a cord allowance, the dealer or trader must have no part in the preparation or delivery of the pulpwood is modified by deletion of the "or delivery" part of the requirement. The change is in line with industry practice in this area.

Appoint Blotting Committee

[FROM OUR REGULAR CORRESPONDENT]

WASHINGTON, D. C., May 17, 1944—Five executives of firms producing blotting paper have been appointed to a Blotting Paper Manufacturers Industry Advisory Committee, the Office of Price Administration announced today.

These business men, representative of the industry generally, will consult with and advise OPA on any problems that might arise in connection with price ceilings on blotting paper.

This commodity is under the General Maximum Price Regulation, with each manufacturer's highest price in March 1942 serving as his ceiilng price. There are no particular problems at the present time on blotting paper ceilings, OPA said.

Initial meeting of the committee will be on May 18 at 11 A. M. in the Homestead Hotel, Hot Springs, Va., when a chairman will be elected and other organizational matters will be dealt with.

The committee follows: J. P. Massie, Albemarle Paper Manufacturing Company, Richmond, Va.; W. W. Langtry, District of Columbia Paper Mills, Inc., Washington, D. C.; Paul H. Travis, Rochester Paper Company, Rochester, Mich.; G. A. Carlton, Standard Paper Manufacturers Company, Richmond, Va.; J. J. Hallowell, Wrenn Paper Company, Middletown, Ohio.

Employees Cooperate at Castleton

[FROM OUR REGULAR CORRESPONDENT]

CASTLETON, N. Y., May 15, 1944 — The Fort Orange Paper Company, organized in 1858, has survived several wars and each has brought its own problems. A shortage of help was always the dominant worry but it took this war and the employees of the paper plant to give the ancient problem its most dramatic solution. The solution was formed through the cooperative energies of members of the local branch of the International Brotherhood of Papermakers and the International Brotherhood of Pulp, Sulphite and Paper Mill Workers. It provides overtime work on a voluntary basis for many employees now totalling a week of 64, 70 and 80 hours. Two shifts of eight hours each run through the latter period. But it became necessary to observe the longer schedule or a shutdown of the mill would have been necessary. Six months ago when approximately half a hundred workers left the ideas for the plan flickered but a few weeks ago it sprang to life with the loss of a group of hands. Reviewed by the foreman and superintendent, it was presented to the president and behind it stood the willing decisions of many people to work extra hard to see it through.

Chicago Reports Paper Market is Tighter

Distribution of Paper and Paper Products By End-Use Is Increasing —Waste Paper Collections Are Good — Salesmen Hear Talk On Printing Trends — Waste Dealers Hold Meeting — Other News.

[FROM OUR REGULAR CORRESPONDENT]

CHICAGO, Ill., May 15, 1944—The Chicago paper market gave little indication of changing, as jobbers and manufacturers representatives prepared to go into summer months with little thought of anything but trying to please customers and fulfill wartime requirements in a most chaotic period. Little by little, the consumer public has learned to appreciate the fact that paper is a very scarce article and this public relations step, alone, has had something to do with improving trade relations in this area.

The set-up box and general paper box industry here is probably the most upset this time as further curtailment is in the offing. Newsprint shortages are also stressed by latest WPB curtailment programs. Sulphites in all grades were in exceptionally heavy demand while the book and cover paper indsutry, in general, was finding it increasingly necessary to establish "end usage" to fill orders. Waste paper collections continued excellent but there still persisted the belief that an increase in ceilings would cause a general over-all betterment, particularly among the professional group where incentive still plays a major part.

Waste Dealers In One-Day Meeting

The National Association of Waste Material Dealers, Inc., held a one-day meeting in Chicago on May 9 terminating in a banquet at the Hotel Sherman at which Ben Friedman, chief of the cooper section of the WPB and W. M. Scanlon, WPB regional salvage director, were the speakers. During the course of the day the unusually good attendance heard talks by James T. Flannery, chief of the waste materials unit of the OPA; Lou Spiess, attorney for the Association, and John R. Robinson, Chicago Newspaper Publishers Association, who gave a graphic account of the paper salvage job done in Chicago. Charles Haskins, secretary of the group, also spoke and reported on the progress of the indsutry with reference to manpower, price ceilings and elimination of the black market tendencies within the industry. Part of the discussion, it is reported, concerned efforts to increase the prices of waste paper to expedite the over-all salvage program. It was reported that over seventy per cent of the waste paper business in the nation was represented at the sessions. During the program Paul White, New York City, was formally inducted into office as President of the Association. Stuart B. Supphin, president of the Waste Paper Institute, was chairman of the program.

McMurtrie Speaks To Salesmen

Douglas C. McMurtrie, Ludlow Typography Company, was the guest speaker at the regular Monday noon, May 8, meeting of the western division of the Salesmens Association of the Paper Industry held at the Hotel Sherman. Many members and guests were present to hear Mr. McMurtrie discuss "Current Trends in Printing." The Ludlow representative, who is one of the outstanding international figures in typography, traced the art of printing from the moment he entered the business as an apprentice, until the present time and analyzed the forms and the developments which had been made in each. Mr. McMurtrie stressed the high quality of paper, prior to the War curtailment, and, comparing this quality to that of several years ago, commented on the way in which quality had improved the finished printing job. He also outlined the importance of inks and discussed the chemistry of inks which, during the past five or six years, had been "especially significant." He commented on the contributions of hot-set ink, cold set ink and other types which had helped not only the finished printing job but the speed with which such work could be completed. For example, he cited the new "web" press which could produce 16,000 impressions an hour, with five colors on both sides, and contrasted this to the performance of the cylinder press wherein it would take 160 cylinder presses, size 38 x 50, to produce the same job. The Ludlow executive also presented several illustrations of the actual use of paper and printing on the battle front and concluded with the statement that "printing is indeed fighting for freedom."

Mr. McMurtrie was introduced by "Pat" Patterson, Flambeau Paper Company, western vice-president of the Salesmen's Association of the Paper Industry.

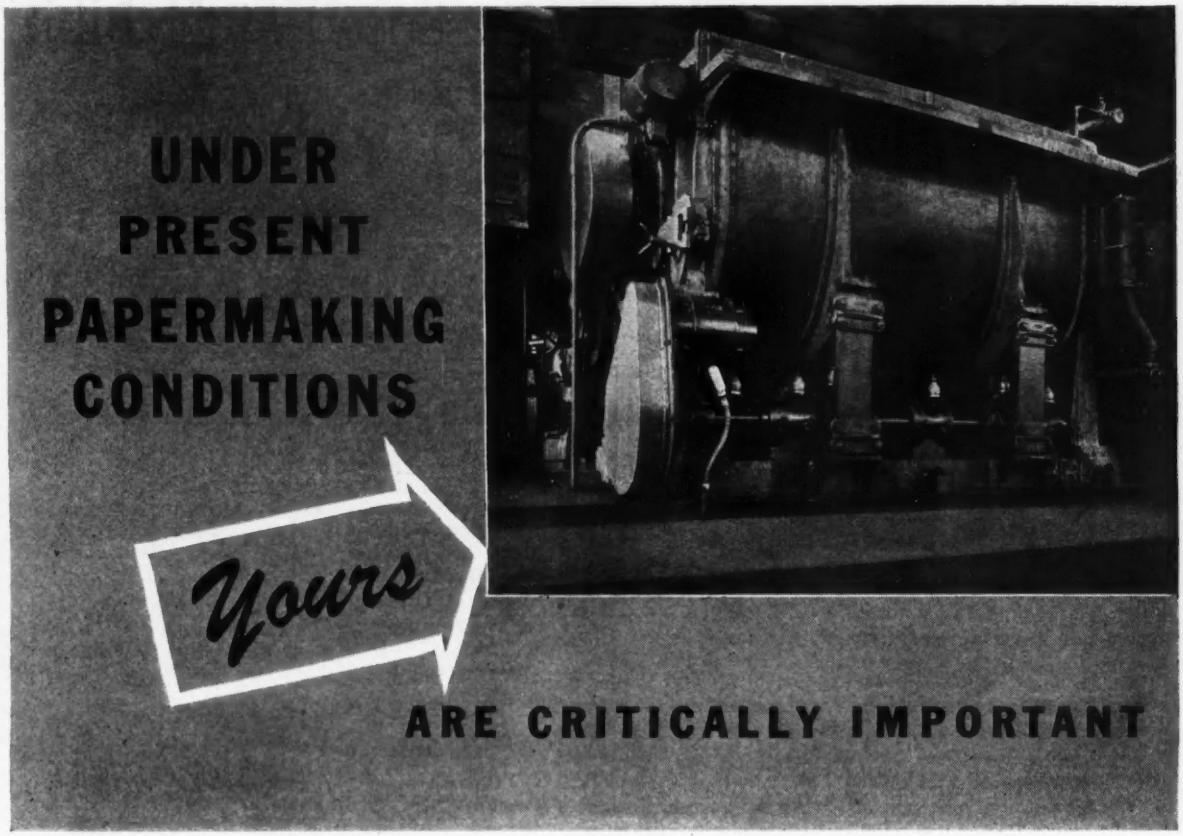
To Attend OPA Session

H. K. Snyder, Central Waxed Paper Company, and P. J. Massey, H. P. Smith Paper Company, are among the eighteen waxed paper manufacturers who are expected to meet in Chicago on May 18 to discuss their programs with officials of the Office of Price Administration.

Merchants Concentrate on Paper Salvage

The Chicago Retail Merchants Association this week sent an appeal to all Chicago retail stores to redouble their efforts to conserve paper. "Neither statistics nor quotations should be necessary to convince merchants that the paper supply situation is becoming much more critical than it has been," warned the Association. "It should be obvious that every store must constantly check its operations to make certain that the waste of wrapping and packing materials has been so completely eliminated and that all means of conserving these vital materials are fully employed."

Chicago and Illinois retailers were also studying a proposed "Declaration of Policy" expected to be issued soon from the War Production Board. This "Declaration" will be of a voluntary nature but specifically pointing out exactly how merchants must conserve paper or expect far more drastic measures by government edict. The proposals in the "Declaration" were declared here to be "no more than what most merchants should long ago have adopted as standard policy. They reflect common sense and good judgment at a time when any school boy should know that the supply of paper and boxes is so insufficient."



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Reforestation Story Presented at Exhibit

Value of Forest Products Shown Had Exhibits Ranging From Seedling Trees To Plastic Parts of A Liberator Bomber—Consolidated Water Power & Paper Company Had A Special Display.

[FROM OUR REGULAR CORRESPONDENT]

APPLETON, Wis., May 15, 1944—The story of reforestation and the potential value of trees was portrayed at a Reforestation Institute and Exhibit at Rhinelander, Wis., May 12 and 13. The exhibit, sponsored by Trees for Tomorrow, Inc., had 1,000 square feet of exhibit material, ranging from one-year-old seedling trees to plastic doors, floors and armor of a Liberator bomber.

Outstanding at the institute was a special display from the Consolidated Water Power and Paper Company of Wisconsin Rapids, Wis., a member mill of the sponsoring group. It centered on "Consoweld," the new plastic which has become so vital a factor recently in the construction of planes for the Army Air Corps. This material can be sawed, machined, and die cut. It can be made into beams, trusses, and ribs, forming the main structural elements of airplanes and similar light weight structures. It was the first showing of Consoweld in northern Wisconsin.

To mark the opening of the exhibit, 400 Rhinelander High School students marched into their new 360-acre school forest to spend the day planting 40,000 seedling trees. Federal forest service and soil conservation service officials, state conservation and public instruction officials, district foresters and county agencies cooperated to dramatize the importance of reforestation and good forest practices.

Among the speakers were: Wakelin McNeel, state club leader, University of Wisconsin Extension Service, whose topic was "What Reforestation Means to Northern Wisconsin"; Folke Becker, president of the Rhinelander Paper Company and of Trees for Tomorrow; F. B. Trenk, extension forester and co-inventor of the new tree-planting machine, who spoke on "Community Forests, a Reservoir for Labor, a Source of Revenue"; F. G. Wilson, supervisor of cooperative forestry, conservation department, Madison, "Financial Returns From a Pine Plantation."

The principal speaker Saturday evening was Oswald Obhof, thrice wounded veteran from Guadalcanal, his talk being preceded by a concert by the Rhinelander Paper Company Band. Official war department movies also were shown. A display by the Wisconsin State Conservation Department demonstrated how forests provide a protective cover for wildlife, and an exhibit on forest fire protection was given by the U. S. Regional Forest Service office, Milwaukee, Wis.

Five $500 forestry scholarships will be awarded annually to Wisconsin River Valley high school students showing an interest in forestry, Mr. Becker announced Saturday. The awards will be given after competitive tests in schools in five districts, extending from Wood County north through Vilas County.

Kimberly-Clark Addition Progressing

The roof of the $5,000 addition to the Kimlark office, now known as the Kimberly-Clark Ordnance division at Neenah, Wis., was erected last week, and the new structure has progressed beyond the halfway mark. Office equipment will be moved in at the end of the month. There will be four offices and a large general accounting department office.

Fluor Brothers Construction Company, Oshkosh, Wis., who have the above contract, also are contractors for the Bergstrom Paper Company addition, and are awaiting structural steel before construction can be started on the latter project at Neenah. It was expected that work would be started this week.

Safety Council To Meet At Valley Inn

The May meeting of the Twin City Safety Council will be held at the Valley Inn, Neenah, Wis., instead of Hotel Menasha, Menasha, Wis., the advisory committee of the council decided at a meeting last week at the latter place. L. W. Schafer, Milwaukee, Wis., will speak on "Personal Protective Equipment" and display a number of samples of all types of protective equipment. The last meeting of the season will be held June 21 at Hotel Menasha, where a program of sound slide films will be shown.

Present "Miracle of Paper" Play

"The Miracle of Paper," a radio play was presented recently by pupils of the Combined Locks Grade School, Combined Locks, Wis., over Station WHBY, Appleton, Wis. The play covers the development of paper from earliest Chinese product to the present. The cast was particularly interested because of the mention of reclamation of paper from telephone directories at the Combined Locks Paper Company during the last 12 years, because many of their fathers and brothers helped in the invention or development of the process.

W.V.I.C. Re-elect Officers

Officers and directors of the Wisconsin Valley Improvement Company were reelected May 8 at the annual meeting in the company's offices at Wausau, Wis. The officers are George W. Mead, president of the Consolidated Water Power and Paper Company, Wisconsin Rapids, Wis., president; D. C. Everest, president and general manager of the Marathon Paper Mills Company, Rothschild, Wis., and S. B. Bugge, president of the Tomahawk Kraft Paper Company, Tomahawk, Wis., vice presidents; M. W. Kyler, general manager, treasurer and assistant secretary; Leander Hackbarth, secretary and assistant treasurer; and Miss Emma Koehler, assistant secretary.

Directors reelected were Messrs. Mead, Everest, Bugge, C. E. Kohlhepp, Milwaukee, Wis., comptroller of the Wisconsin Public Service Corporation; R. G. Walter, Milwaukee, vice-president of the Wisconsin Power and Light Company; H. J. Behnke, Neenah, treasurer of the Wisconsin River Paper and Pulp Company; John Alexander, Port Edwards, Wis., president of the Nekoosa-Edwards Paper Company; Folke Becker, Rhinelander, Wis., president of the Rhinelander Paper Company, and W. E. Brooks.

The directors present at the meeting were Messrs. Everest, Bugge, Kohlhepp, Walter, Behnke and

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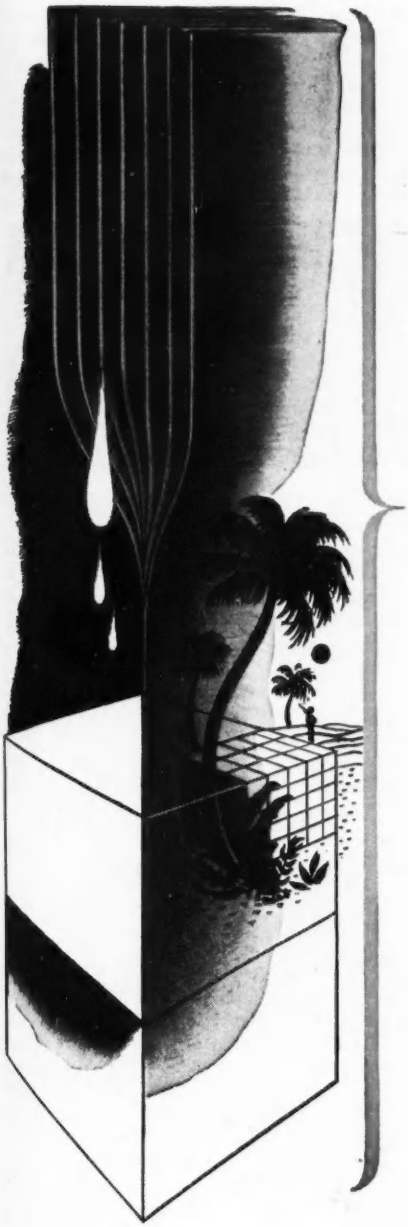

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Brooks. Other attending were E. P. Gleason of the Nekoosa-Edwards Paper Company; Stanton W. Mead of Consolidated; W. F. Thiel, Consolidated's chief engineer; A. G. Kernin, manager of the power division of the Mosinee Paper Mills Company; Mr. Kyler and F. W. Genrich, company counsel.

Paper Institute To Hold Conference

The ninth annual executives' conference of the Institute of Paper Chemistry will be held Thursday and Friday, May 18 and 19, at the Institute at Appleton, Wis. Work will be evaluated and reviewed, and there will be no outside speakers. Thursday morning's session will be devoted to the financial picture, the afternoon's to the education program. Research activity will be on Friday morning's schedule, and membership relations to the afternoon's.

Board President Ernst Mahler, vice president of Kimberly-Clark Corporation, Neenah, Wis., will be the speaker at the banquet Thursday evening. Morning sessions will be held at the Institute, while luncheons, dinners and the afternoon meetings will be at the North Shore Golf Club.

John Strange, secretary-treasurer of the Institute, will be the speaker Thursday morning, and Dr. Harry F. Lewis, dean, and Dr. J. E. Todd, assistant dean, will speak in the afternoon.

There will be staff participation on an analysis of Institute Research activity, fundamental and applied, Friday morning. Dr. Westbrook Steel, executive director, will speak in the afternoon. The staff will be available Saturday for the discussion of specific problems of any member. The Institute board of trustees will meet Wednesday evening.

Institute Staff Included in Directory

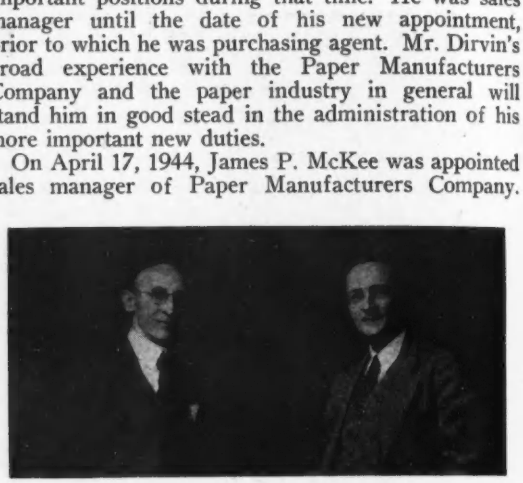
[FROM OUR REGULAR CORRESPONDENT]

APPLETON, Wis., May 15, 1944—The Institute of Paper Chemistry, Appleton, Wis., is well represented in the latest edition of "American Men of Science," which is a directory of American men and women who have achieved success in the fields of scientific and technological research. Twenty-six of the staff of the Institute are included (this number includes three members of the faculty of Lawrence College who are also connected with the Institute). The list, with the special field of activity of each staff member, is as follows: John W. Appling, microbiology; Friedrich E. Brauns, lignin chemistry; Bertie L. Browning, analytical chemistry; Marion A. Buchanan, organic chemistry; James d'A. Clark, paper chemistry (on leave with U. S. Army); Paul F. Cundy, analytical chemistry; Stephen F. Darling, organic chemistry; William U. Gallaher, water and trade waste treatment; John W. Green, organic chemistry; Emil Heuser, cellulose chemistry; Irving H. Isenberg, wood technology; Otto Kress, pulp and paper technology; Harry F. Lewis, organic chemistry; Daniel R. Moltzau, analytical and physical chemistry; Philip Nolan, physics (on leave with U. S. Navy); Irwin A. Pearl, organic chemistry; Anthony R. Ronzio, organic chemistry; Ben W. Rowland, colloid chemistry; Howard H. Rowley, physical chemistry; George R. Sears, physics; Olga A. Smith, bacteriology; Johannes A. Van den Akker, physics; Willis M. Van Horn, trade waste disposal; Sidney D. Wells, pulp and paper technology; Clarence J. West, technical bibliography; and Louis E. Wise, wood chemistry.

Paper Mfrs. Co. Makes Promotions

On April 17, 1944, Vincent A. Dirvin was appointed general manager of Paper Manufacturers Company of Philadelphia, Pa. Mr. Dirvin has been with the company for 28 years and has held many important positions during that time. He was sales manager until the date of his new appointment, prior to which he was purchasing agent. Mr. Dirvin's broad experience with the Paper Manufacturers Company and the paper industry in general will stand him in good stead in the administration of his more important new duties.

On April 17, 1944, James P. McKee was appointed sales manager of Paper Manufacturers Company.



V. A. DIRVIN J. P. MCKEE

25 years experience as salesman with the company, a genial personality and a complete knowledge of the company's products provide an exceptional background and a guarantee of success in his new undertaking. "Jim" McKee is well known to many of the company's customers and has the full cooperation and support of the sales force of 25 high grade, trained men in various parts of the United States. He is a veteran of World War I (U.S.N.); Past Commander of Post 376 American Legion and Member Voiture No. 1 La Societe'Des 40 Hommes et 8 Chevaux.

April Newsprint Statistics

Production of newsprint in Canada during April 1944 amounted to 236,353 tons and shipments to 256,543 tons, according to the News Print Service Bureau. Production in the United States was 54, 636 tons and shipments 56,103 tons. The output in Newfoundland was 19,725 tons and shipments were 24,077 tons making a total North American production of 310,714 tons and shipments of 336, 723 tons. Total production in April 1943 was 310,708 tons and shipments were 334,758 tons. There was one working day less in April 1944 than in April 1943.

The Canadian mills produced 39,329 tons more in the first four months of 1944 than in the first four months of 1943, which was an increase of four and two tenths percent. The output in the United States was 43,465 tons or fifteen and nine tenths percent less than in the first four months of 1943; in Newfoundland production was 24,874 tons or forty-four and three tenths percent more, making a net increase of 20,738 tons, or one and six tenths percent more than in the first four months of 1943.

Stocks of news print paper at the end of April were 110,964 tons at Canadian mills, 8,326 tons at United States mills, and 45,557 tons at Newfoundland mills, making a combined total of 164,847 tons compared with 190,856 tons on March 31, 1944, and 165,521 tons at the end of April 1943.

Hold Ladies Night at Kalamazoo

[FROM OUR REGULAR CORRESPONDENT]

KALAMAZOO, Mich., May 15, 1944—The Michigan Division of the American Pulp and Paper Mill Superintendents Association, held its annual Ladies' Night dinner and entertainment on Saturday, May 6, at the Park American Hotel. The arrangement instituted three years ago of having a cocktail hour from 6 to 7 preceding dinner was repeated this year and this part of the program with Robt. Buss in charge, was thoroughly enjoyed by the members, their wives, and guests.

Allen B. Milham Is Toastmaster

At the conclusion of dinner Chairman Glen Sutton greeted the gathering and introduced Allen B. Milham, president and general manager of the Bryant Paper Company, as toastmaster. In his new capacity Allen performed like a veteran and kept the program moving without delays. Letters and telegrams from the following expressing regret in not being able to attend, were read: S. G. Blankenship, national president, "Bob" Eminger, national secretary, Grover Keith, past national president, H. H. Latimer, 3rd vice president, O. W. Messner, 5th vice president.

R. L. Barton Tells About Convention

Ray L. Barton, 1st vice president, gave a brief talk in reference to the National Convention in Chicago May 23-24-25-26. The executive affairs of the Michigan Division were introduced and also Ed Coughlin, past national president, and Harry Eliason who so ably served as toastmaster on the 1943 party. Mrs. H. R. King and Max Bardeen, presidents of the Rex Paper Company and the Lee Paper Company, acknowledged introductions.

Edward J. Thom Speaks

Edward J. Thom, manager of pulp sales for Canada Paper Company, Howard Smith Paper Mills Ltd. of Montreal, was an honored guest and responded with a short pleasing and humorous address. Mr. Thom can always pack a lot of logic in a few words and this occasion was no exception.

W. W. Kingman, vice president of Edgar Brothers Company also gave a brief but interesting talk. The entertainment was a floor show followed by dancing until one A.M.

Those in Attendance

Those attending were:—

Richard Alden, Watervliet Paper Company, Watervliet, Mich.; Ralph Atkins, Lee Paper Company, Vicksburg, Mich.; Mr. and Mrs. Max Bardeen, Lee Paper Company, Vicksburg, Mich.; Mr. and Mrs. Norm Bardeen, Lee Paper Company, Vicksburg, Mich.; Mr. and Mrs. Ray Barton, Michigan Paper Company, Plainwell, Mich.; Mr. L. H. Breyfogle, Draper Brothers Company; Mr. Robert Buss, Hercules Powder Company, Kalamazoo, Mich.; Mr. and Mrs. O. W. Callighan, Edgar Brothers Clay; Mr. and Mrs. T. N. Carter, Cameron Machine Company; Mr. and Mrs. Fred Chappell, Hercules Powder Company, Kalamazoo, Mich.; Mrs. Dean R. Clow, Bryant Paper Company, Kalamazoo, Mich.; Mr. Art Coffin, Titanium Pigment Corporation; Mr. and Mrs. A. W. Cole, Rex Paper Company, Kalamazoo, Mich,; Mr. and Mrs. Manvel Coombs, Kalamazoo Tank and Silo Company, Kalamazoo, Mich.; Mr. and Mrs. E. T. A. Coughlin, Bryant Paper Company, Kalamazoo, Mich.; M. Wayne Crotty, Bryant Paper Company, Kalamazoo, Mich.

Lt. and Mrs. Dancey, Goodyear Tire and Rubber Company; Mr. and Mrs. J. A. Deane, Michigan Paper Company, Plainwell, Mich.; Mr. and Mrs. Jack Dickson, R. T. Vanderbilt Company; Mrs. Frank Eilers, Kalamazoo, Mich.; Mr. and Mrs. H. D. Eliason, Cellulose Sales Company, Inc.; Mr. and Mrs. L. E. Fitzgerald, Hercules Powder Company, Kalamazoo, Mich.; Mrs. W. B. Hadley, Kalamazoo, Mich.; Mr. and Mrs. Larry Halleck, Kalamazoo Tank and Silo Company, Kalamazoo, Mich.; Mr. and Mrs. H. G. Heath, Rex Paper Company, Kalamazoo, Mich.; Mr. and Mrs. T. B. Hennessey, Otsego Falls Paper Company, Otsego, Mich.; Mr. and Mrs. B. S. Hobson, Michigan Paper Company, Plainwell, Mich.; Mr. and Mrs. Fred Hodgemire, Hawthorne Paper Company, Kalamazoo, Mich.; Mr. and Mrs. W. Hurlburt, Otsego, Mich.; Mrs. H. R. King, Rex Paper Company, Kalamazoo, Mich.; Mr. W. W. Kingman, Edgar Brothers Company, McIntyre, Ga.; Mr. and Mrs. W. A. Kirkpatrick, Allied Paper Mills, Kalamazoo, Mich.

Mr. and Mrs. Dave Klausmeyer, Illinois Envelope Company, Kalamazoo, Mich.; Mr. and Mrs. A. R. Kloosterman, Hercules Powder Company, Kalamazoo, Mich.; Mr. and Mrs. L. H. La Liberte, Kalamazoo Vegetable Parchment Company, Parchment, Mich,; Mr. and Mrs. Frank Libby, Kalamazoo Vegetable Parchment Company, Parchment, Mich.; Mr. and Mrs. Lloyd J. Lynd, Kalamazoo Machine and Tool Company, Kalamazoo, Mich.; Mr. and Mrs. Hoke Martin, Hercules Powder Company, Kalamazoo, Mich.; Mr. and Mrs. R. J. Mashburn, Hercules Powder Company, Kalamazoo, Mich.; Mr. and Mrs. R. J. McEachen, E. J. Kelly Ink Engineers, Kalamazoo, Mich.; Miss Jennie Michutka, Kalamazoo, Mich.; Mr. and Mrs. R. R. Milroy, E. M. Sergeant Coal Company, Kalamazoo, Mich.; Mr. and Mrs. L. M. Mongreig, U S. Rubber Company; Mr. and Mrs. Wm. H. Monsson, Hooker Electrochemical Company; Mr. and Mrs. Henry Nendorf, Rex Paper Company, Kalamazoo, Mich.; Mr. and Mrs. E. E. Nooe, Western Board and Paper Company, Kalamazoo Mich.; Mr. and Mrs. John J. Nylund, General Dyestuff Corporation, Chicago, Ill.

Mr. and Mrs. Harry Pearson, Pioneer Paper Stock Company, Kalamazoo, Mich.; Mr. and Mrs. A. B. Perlick, Kalamazoo Vegetable Parchment Company, Parchment, Mich.; Mr. and Mrs. Charles B. Rader, Sutherland Paper Company, Kalamazoo, Mich.; Mr. and Mrs. George Rice, Kalamazoo Vegetable Parchment Company, Parchment, Mich.; Mr. and Mrs. A. Wm. Riedel, Kalamazoo, Mich.; Mr. and Mrs. Martin Robyn; Mr. and Mrs. Rinehart Rock, Kalamazoo, Mich.; Mr. and Mrs. J. G. Ruimveld, Rex Paper Company, Kalamazoo, Mich.; Miss Maxine Schays, Kalamazoo, Mich.; Mr. and Mrs. J. Scheuermann, Cameron Machine Company; Paul Schreiber, General Dyestuff Corporation; Mr. and Mrs. Allan Milham, Bryant Paper Company, Kalamazoo, Mich.; Mr. and Mrs. Al Sherwood, Sutherland Paper Company, Kalamazoo, Mich.; Mr. and Mrs. Russell Shew, Otsego Falls Paper Company,

Otsego, Mich.; Mr. Homer Stafford; Mr. Robert Stewart, Kalamazoo Vegetable Parchment Company, Parchment, Mich.; Mr. and Mrs. R. J. Suess, Otsego Falls Paper Company, Otsego, Mich.

Mr. and Mrs. Glen Sutton, Sutherland Paper Company, Kalamazoo, Mich.; Mr. and Mrs. Swanson, Allied Paper Mills, Kalamazoo, Mich.; Mr. and Mrs. P. A. Talbot, R. T. Vanderbilt Company; Mr. and Mrs. E. B. Taylor, Steinhall Starch Products; Mr. and Mrs. William Taylor, American Cyanamid & Chemical Corporation, Kalamazoo, Mich.; E. J. Thom, Howard Smith Paper Mills, Ltd., Montreal, Canada; Mr. and Mrs. C. E. Van Buren, Albany Felt Company; Mr. and Mrs. Robert Van Kirk, Penick & Ford; Lt. Dwight Vickrey, Fort Custer, Mich.; Mr. and Mrs. Joe Waber, Rex Paper Company, Kalamazoo, Mich.; Mr. and Mrs. H. O. Ware, Hercules Powder Company, Kalamazoo, Mich.; Mr. and Mrs. Arnold Weller, Sutherland Paper Company, Kalamazoo, Mich.; Mr. and Mrs. Leo Willoughby, Bryant Paper Company, Kalamazoo, Mich.

Lange's Handbook of Chemistry

The fifth edition of the Handbook of Chemistry, compiled by Norbert A. Lange of Western Reserve University has just been issued by the Handbook Publishers, Inc. (2092 pp., 5⅜ x 7¾ Fabricoid). It is the largest book of its kind devoted to chemistry, the index alone having more than 3600 entries. It is interesting to watch these handbooks grow, this edition being 550 pages larger than the fourth. The organic compounds table lists 6507 individual compounds and in addition over 3600 synonyms as footnotes. There is also an excellent mathematical appendix.

In addition to the tables that would be expected are the trade names of chemicals and dyestuff intermediates, balanced equations of the most varied reactions, definitions of chemical terms, laboratory arts and recipes and tables of fats, oils, waxes, plastics, gum and resin solvents, organic solvents, and Beilstein's references to more than 6500 compounds. Included also are materials of construction, solid and liquid fuels, valves, pipes and fittings, viscosity data and data on measurement of heat, fluid flow, etc. Several pages are devoted to the type of container suitable for packaging many hazardous chemicals. Copies may be obtained from the Book Department of the Technical Association of the Pulp and Paper Industry, 122 E. 42nd street, New York 17, N. Y. at $6.00 per copy.

Empire State TAPPI to Meet

The Watertown Group of the Empire State Section of the Technical Association of the Pulp and Paper Industry met at the Woodruff Hotel, Watertown, N. Y., on May 11th. W. A. Woodcock of the Carbide and Carbon Chemicals Company talked on Plasticizers for the Paper Industry. Forty-two individuals attended. W. R. Benson of the Carthage Division of the National Paper Products Company presided.

A joint meeting of the Watertown, Syracuse and Hudson Valley Groups of TAPPI, together with the New York-Canadian Division of the Superintendents Association will meet at Watertown on June 23 and 24. There will be a technical program on Friday and Saturday morning. There will be a golf tournament on Saturday afternoon and a dinner dance on Saturday evening.

J. W. Flint Joins Bulkley, Dunton & Co.

The appointment of J. Wyman Flint to their tonnage sales staff has been announced by Bulkley, Dunton & Co. Mr. Flint will specialize in the sale of publication papers.

Before joining Bulkley, Dunton, Mr. Flint was associated for 6 years with the Minnesota and Ontario Paper Company as sales executive, handling publication sales. Prior to that he was president of Dever Brothers Paper Company of Milwaukee, whose name was later changed to Flint Paper Company.

Mr. Flint comes from an old family of papermakers; his grandfather, Wyman Flint, having been

J. Wyman Flint

the founder of Wyman Flint & Sons, paper manufacturers of Bellows Falls, Vt., established around 1870. His father, John W. Flint, was one of the founders of the Clermont Paper Company, which was among the first kraft paper mills in the United States.

Starting his career in the paper trade in 1915, Mr. Flint was first associated with the Clermont Paper Company and Wyman Flint & Sons, and in 1917 joined the Army. Resuming his work after World War I with Dever Brothers in Milwaukee, he has been in the paper trade ever since. His broad experience and thorough knowledge of the paper business are recognized by the large number of friends he has made in the trade, as well as by his associates.

A native of New England, Mr. Flint was born in Bellows Falls, Vermont, and attended Harvard. He is married and has a son who is a lieutenant in the Army.

Discusses Newsprint Problem

The Inland Daily Press Association will hold its Spring conference at the Hotel Sherman on May 16 and 17. According to advance information the recent decree of WPB that orders of newsprint of more than 100 tons are to be cut 10 per cent is expected to cause most of the "smoke" at the conference table. The newsprint "round-up" on May 17 with Vice President C. L. Anderson presiding, is expected to focus attention on experience reports from members on the newsprint and other conservation measures and the effects, to date, of order L. 240.

Wax Paper Committee Appointed

[FROM OUR REGULAR CORRESPONDENT]

WASHINGTON, D. C., May 17, 1944—Eighteen manufacturers, representing all branches of the waxed paper industry, have been appointed to a Waxed Paper Industry Advisory Committee, the Office of Price Administration announced today.

These business men, from various parts of the country, and representing both large and small companies, will consult with and advise OPA in connection with the administering of waxed paper ceiling prices at the manufacturing level and also with the formulation of any changes in the provisions governing these ceilings.

First meeting of the committee will be May 18, in the Chicago OPA Regional Offices, 226 West Jackson Boulevard. A chairman will be named at that time, and expressions of opinion will be invited on the existing waxed paper ceilings and OPA provisions generally.

The committee follows: Philip C. Toye, American Tissue Mills, Holyoke, Mass.; Clarence W. Hoeper, Badger Paper Mills, Inc., Peshtigo, Wis.; Sidney Jacobson, Henle Wax Paper Manufacturing Company, Inc., New York, N. Y.; Ed. Lewandowski, The Menasha Products Company. Menasha, Wis.; Donald Ramsey, Nashua Gummed and Coated Paper Company, Nashua, N. H.; J. E. Edelstein, Rap-In-Wax-Paper Company, Minneapolis, Minn.; A. F. Kletzien, Saniwax Paper Company, Kalamazoo, Mich.; Jules Wolbrette, Southern Paper Ltd., New Orleans, La.; Edgar L. Berkley, Waxide Paper Company, Kansas City, Mo.; R. H. Rausch, Automatic Paper Machinery Company, Hoboken, N. Y.; H. K. Snyder, Central Waxed Paper Company, Chicago, Ill.; A. Southon, Kalamazoo Vegetable Parchment Company, Kalamazoo, Mich.; R. C. McCaskey, Minerva Wax Paper Company, Minerva, Ohio; Leslie L. Jacobs, Pollock Paper and Box Company, Dallas, Tex.; A. P. Mitchell, Riegel Paper Corporation, New York, N. Y.; P. J. Massey, H. P. Smith Paper Company, Chicago, Ill.; V. H. Wilshire, The Specialty Papers Company, Dayton, Ohio; George C. Wieman, Western Waxed Paper Company, Los Angeles, Cal.

Recent Customs Decisions

Paper board imported from Canada for use in packaging cereal foods, claimed to be dutiable at 20 per cent as test container board, classified by Customs officials as vat lined board at 30 per cent, was held to be dutiable at the higher rate because of its composition, even though it was to be used as the base for containers, according to a report issued by the Import Committee of the American Paper Industry.

A prolonged study on the usual composition of straw paper and straw board has resulted in a decision by Customs officials to admit a Canadian product containing 15 per cent ground wood as straw board at 15 per cent. At first the Customs officials believed that because of the presence of ground wood the material could not be considered straw board, but investigation among American mills indicated that the use of a small proportion of ground wood was necessary in the production of any straw board because of machine requirements, and that such use was customary. It is indicated, however, that too large a proportion of ground wood would throw paper and paper board otherwise consisting of straw, into the higher rate classification of 30 per cent as paper not specially provided for.

A long pending test case at Los Angeles involving the dutiability of marbled kraft has been decided by the United States Customs Court which holds that the paper is not ordinary kraft wrapping paper dutiable at 20 per cent, but as wrapping paper with a fancy effect at 4½ cents per pound and 10 per cent, the paper being produced on a machine with attachments, that is, with two headboxes carrying different kinds or colors of pulp.

To Handle Masonite's Oil Interests

A special oil committee has been appointed to handle Masonite Corporation's possible oil interests in Mississippi, said Ben Alexander, Masonite president, in a letter to stockholders.

Thus far, no wells have been drilled or any oil found on company lands, Mr. Alexander pointed out, although Masonite owns some timber acreage near the recent discoveries in Jasper and Wayne counties.

Since the announcement of two possible new oil fields there, the company has been besieged by inquiries, requests for interviews and offers for leases. So that the company can continue to carry out without interruption its primary function of manufacturing Presdwood Hardboards and related products for the war effort, the special committee has been set up, Mr. Alexander stated.

"This committee, which is now working actively and aggressively, will effectively handle our oil matters in all their phases," Mr. Alexander said. "However, time, further exploration and drilling are the only factors which can determine the ultimate value of these mineral interests."

The committee consists of Alexander Deussen, chief geologist, of Houston, Texas; Urban Hughes, resident geologist, of Laurel, Miss.; R. M. Heskett and C. J. Winton, Jr., Masonite directors, and L. Parker McKinley, secretary.

Carter Estate Placed at $1,325,000

BOSTON, Mass., May 15, 1944—Share in a $1,350,000 estate was held open for a son missing since 1938 from the ranks of the British Battalion of the International Brigade fighting on the Spanish Loyalists' Aragon front, according to provision in the will, filed May 8 in Middlesex Probate Court, East Cambridge, of Winthrop L. Carter, former president of the New England Council of Chestnut Hill.

The son, Barton, former Williams College student, will be considered alive until Jan. 1, 1947, and thereafter until the death of his mother, Mrs. Elizabeth B. Carter, the will provided. Equal shares are left to Barton, his mother, two brothers, Sydney H. Carter of Baltimore and Winthrop L. Carter, Jr., of Nashua, N. H., and a sister, Mrs. Katherine C. Smith. The estate is estimated at $1,325,000 in personal property and $25,000 in Massachusetts and $14,500 in New Hampshire real estate.

Scrap Sisal at Ceilings in Boston

[FROM OUR REGULAR CORRESPONDENT]

BOSTON, Mass., May 15, 1944—Scrap sisal is selling freely at ceiling prices from 4.00 to 4.75, depending on the grade. No. 1 scrap burlap is moving at 3.25 to 3.37½ for the best grade. Australian wool pouches are selling up to 3.40, compared with recent sales at as low a figure as 3.12½. Soft jute ropes, very hard to obtain, have sold recently at 5.25. Mixed strings for sorting are moving at 2.00 to 2.25.

FINANCIAL NEWS

New York Stock Exchange

STOCKS

High, Low and Last for Week Ending May 13, 1944

	High	Low	Last
A. P. W.	2½	2⅜	2⅜
Armstrong Cork Co.	37½	37	37¼
Celotex Corp.	11⅜	11⅛	11⅛
Celotex Corp., pf.	17⅜	17⅛	17⅜
Certain-Teed Products Corp.	5	4¾	5
Certain-Teed Products Corp., pf.	59¼	58	58
Champion Paper & Fibre Co.	25	24	24
Champion Paper & Fibre Co., pf.	111	109¾	110½
Congoleum Nairn Co.	24	23⅜	23¾
Container Corp. of America	23½	22¾	23⅛
Continental-Diamond Fibre Co.	11¼	11⅛	11⅛
Crown-Zellerbach Co.	16¾	16½	16½
Crown-Zellerbach Co., pf.	99⅝	98	98¼
Dixie Cup Co.	16⅛	16	16
Dixie Cup Co.—A	44⅞	44¼	44½
Flintkote Co.	20¼	19	19⅜
Flintkote Co., pf.	109	108½	108½
Robert Gair	3⅝	3½	3⅜
Robert Gair, pf.	14¼	14¼	14¼
International Paper Co.	15¾	14¾	14⅞
International Paper Co., pf.	77	74¾	75¼
Johns-Manville Corp.	93½	90	91½
Johns-Manville Corp., pf.	....	....	....
Kimberly-Clark Corp.	35½	35½	35½
MacAndrews & Forbes	26⅛	26	26
MacAndrews & Forbes, pf.	....	....	....
Masonite Corp.	46⅞	44¾	45¼
Mead Corp.	9⅛	8⅞	8⅞
Mead Corp., pf. A-6%	91	91	91
Mead Corp., pf., B-5½%	83	83	83
National Container Corp.	14¾	14⅛	14¼
Paraffine Companies, Inc.	49½	49	49½
Paraffine Companies, Inc., pf.	....	....	....
Rayonier, Inc.	14⅞	14¼	14⅜
Rayonier, Inc., pf.	30¼	30	30¼
Ruberoid Co.	29	28¾	29
Scott Paper Co.	40⅛	39¾	40⅛
Scott Paper Co., pf.	112	110	112
Sutherland Paper Co.	32	32	32
Union Bag & Paper Corp.	10⅝	10¼	10¼
United Paperboard Co.	4¾	4½	4¾
U. S. Gypsum Co.	74½	72	73
U. S. Gypsum Co., pf.	175	175	175
West Virginia Pulp & Paper Co.	19⅛	18½	19⅛
West Virginia Pulp & Paper Co., pf.	106¾	106¾	106¾

BONDS

Abitibi Pulp & Paper Co. 5s '53	71⅞	71⅞	71⅞
Celotex Corp. 3¾s '55	103¾	103	103¼
Certain-Teed Products Corp. 5½s '48	101¼	100¾	101
Champion Paper & Fibre Co. 4¾s '50	....	....	....
International Paper Co. 6s '55	108⅛	107	107
International Paper Co. 5s '47	103¾	103¼	103¼
Mead Corp. 3½s '53	....	....	....
West Virginia Pulp & Paper Co. 3s '54	....	....	....

New York Curb Exchange

STOCKS

High, Low and Last for Week Ending May 13, 1944

	High	Low	Last
Great Northern Paper Co.	32½	32⅜	32⅜
Hummel-Ross Fibre Corp.	5⅛	4⅞	4⅞
St. Regis Paper Co.	4⅜	4¼	4¼
St. Regis Paper Co., pf.	148¾	147	147
Taggart Corp.	5¾	5⅝	5⅝

BONDS

American Writing Paper Co. 6s '61	....	....	....

Puget Sound Nets 33 Cents

The Puget Sound Pulp and Timber Company reports a net profit of $123,781 from operations in the first quarter of 1944, after providing $229,876 for Federal taxes, in comparison with $104,759 net profit, after $137,644 for Federal taxes, in the first quarter of 1943. Net per common share was 33 cents in the first quarter of 1944, compared with 27 cents in the like period of 1943.

Pulp production totaled 28,320 tons in the first quarter of 1944, in comparison with 21,181 tons in the first quarter of 1943. Net sales and other revenue amounted to $1,730,090 in the first quarter of 1944, against $1,307,090 in the 1943 first quarter. Profit before tax provisions was $353,657 in the first quarter of 1944, compared with $242,403 in that quarter of 1943.

I. P. Defeats Accounting Check

Stockholders of the International Paper Company defeated by a wide margin at their annual meeting a resolution enclosed in the proxy statement under a rule of the Securities and Exchange Commission calling for an immediate re-examination of accounts for several past years by independent engineers or accountants. The vote was 1,100,017 common and 549,293 preferred shares against 38,834 common and 14,509 preferred shares for the resolution.

R. J. Cullen, chairman of the board, announced at the meeting that the company's net profit for the first quarter of 1944 was $2,116,706, against $2,023,118 in the same period of last year, with earnings computed on the same basis for both periods except that current taxes are based on 1944 rates.

Discussing the prospect of common dividends, Mr. Cullen said the company would have an opportunity to do a large volume of profitable business after the war ended, and that the board of directors wished to be sure that it was in good financial condition to take advantage of the conditions. To that end the company must maintain adequate cash and working capital, he said. He added that the board had examined carefully the resources and future needs of the business and felt it would be improvident and unwise to pay a common dividend at this time.

Great Lakes Makes Annual Report

[FROM OUR REGULAR CORRESPONDENT]

TORONTO, Ont., May 15, 1944—W. Earle Rowe, president of the Great Lakes Paper Company, stated at the annual meeting that the plant had been maintained in a high state of efficiency, and that improvements in wood-handling equipment and pulp-drying facilities are contemplated during the current year. Parts for guns and other war equipment were produced by the company's machine shop.

An acute manpower shortage in woods operations, and consequent reduction of mill operations to 70% of capacity, combined with higher costs to reduce net 1943 profits of the company to $349,040, with the 1943 figures bracketed, ($579,855), after taxes of $220,000 ($475,000). Of last year's taxes, $12,000 was refundable. After adjustment of $47,014, earned surplus was increased by $2,026, bringing it to $1,082,337.

Current assets at the end of 1943 totaled $4,699,256 ($4,384,862), inventories dropping to $751,932 ($890,508) and net expenditures and advances on woods operations to $1,116,502 ($1,288,779). Additional redemption of 5% first mortgage sinking fund bonds reduced the total outstanding to $4,979,500 ($5,867). Arrears on "A" and "B" cumulative shares amount to $9.75 per share.

Lily-Tulip Cup Nets $3.87

The Lily-Tulip Cup Corporation and subsidiaries for the twelve months to March 31 reports a net profit of $733,526, or $3.87 a common share, against $698,301, or $3.68 a common share, for the preceding twelve months.

Great Lakes Profits Off

The Great Lakes Paper Company, Ltd, for 1943 reports a net profit after bond interest, taxes and other charges of $349,039, compared with $591,856 in 1942.

we make them

as good as

we know how

and we do know how

It will certainly pay you to study the Heppenstall E. I. S. Chipper Knife guarantee. Here it is:—We *guarantee* these knives to show a unit cost below any other chipper knives on the market—with the following points taken into consideration—(1) *Operating hours between grinds.* (2) *Grinds per knife.* (3) *Chipper "down time".* (4) *Sawdust loss.* (5) *Oversized chips.* . . . Pretty complete and *conclusive* isn't it? . . . Well, we have been safely making that guarantee for a good many years. What more can we say?

Heppenstall Company

Pittsburgh, Pennsylvania

Dr. Dow Gets Gold Medal

Warning that trying to ease out of governmental controls instead of abruptly terminating them after the war would only ease us into permanent controls that would enslave the nation, Dr. Willard H. Dow Saturday night in a speech accepting the gold medal of the American Institute of Chemists struck out for the United States to start being American again and to start at once.

Dr. Dow, who is president of the Dow Chemical Company—the pioneers in the development of magnesium in this country and the largest producer, recently appeared before the Truman Committee in Washington and demanded to be heard on what he called "a Department of Justice smear" that his company had been a member of a German cartel. The Committee fully vindicated him, and the speech at a dinner at the Biltmore Hotel in New York was in acknowledgement of the Institute's award for "the outstanding man who has done the most for the chemist as a man, the chemical profession, and the translation of research into products useful in both peace and war." The previous recipients of the award have been: George Eastman, Andrew W. and Richard B. Mellon, James Byrant Conant, Marston Taylor Bogert, Frederick G. Cottrell.

As a part of the presentation, which was made by Dr. Gustav Egloff, president of the American Institute of Chemists and Director of Research of the Universal Oil Products Company, of Chicago, Colonel Bradley Dewey, National Rubber Director, outlined the contributions of the Dow Chemical Company to the war effort. Colonel Dewey stated that, beginning in 1940, the Dow Chemical Company and the Defense Plant Corporation together spent some $200,000,000 in building over 50 new chemical projects. He particularly emphasized the role of the Dow Chemical Company in producing magnesium and also styrene, a necessary and vital ingredient in the synthetic rubber program.

R. O'Neill Goes With Pejepscot

[FROM OUR REGULAR CORRESPONDENT]

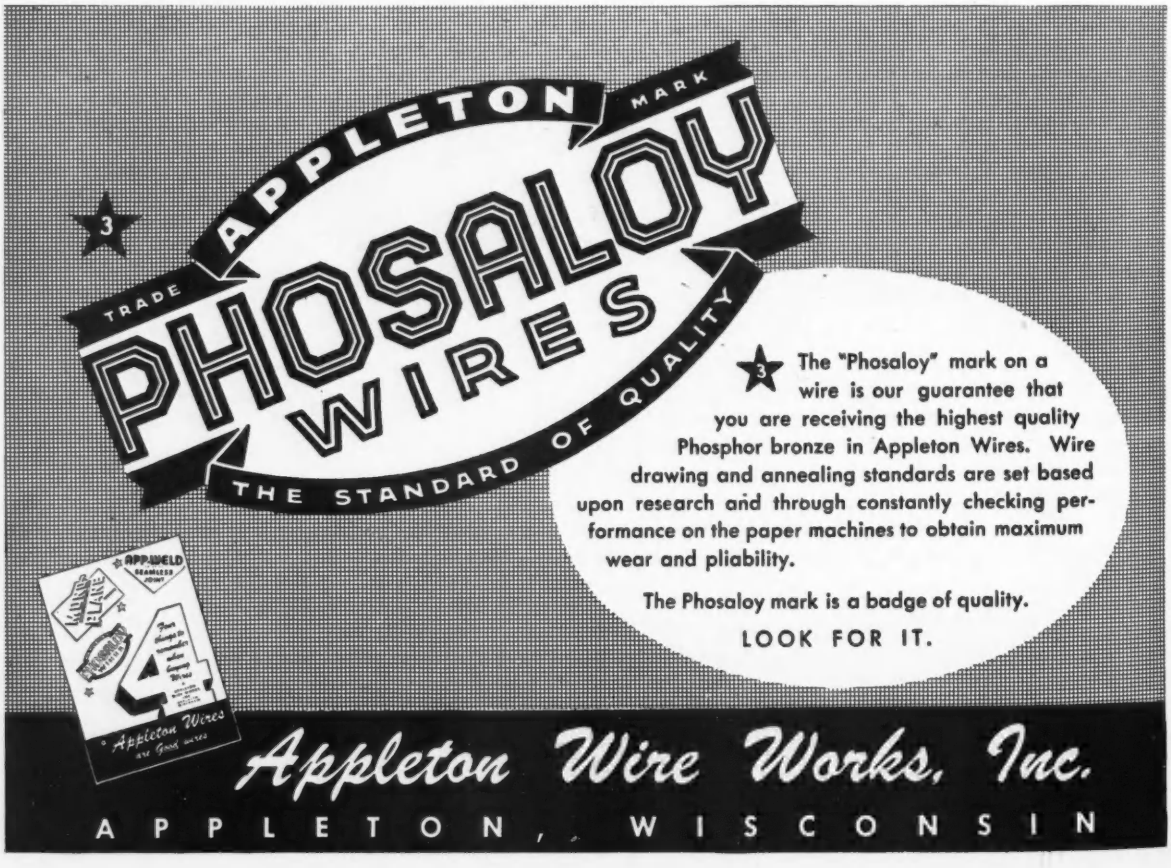
BOSTON, Mass., May 15, 1944 — The Pejepscot Paper Company has appointed Robert O'Neill to take charge of the New England sales office of that company. Mr. O'Neill had previously been connected for some 14 years with the New England sales office of the International Paper Company and for a few years with the Hollingsworth & Whitney Company. More recently he has been chief of the Paper and Products Branch of the Office of Price Administration, New England.

Mr. O'Neill takes the place of Alfred T. Carter, who, according to an announcement by Arthur Schroeder, president of the company, has been transferred to the general sales office of New York, where he will cover a larger territory. He had been in charge of the New England office 13 years.

Paper Products in Larger Quarters

[FROM OUR REGULAR CORRESPONDENT]

BOSTON, Mass., May 15, 1944—The Paper Products Company, formerly in Room 341, at 80 Federal street, is now in larger quarters in Room 804, in the same building. Harry Epstein, manufacturers' agent, is manager.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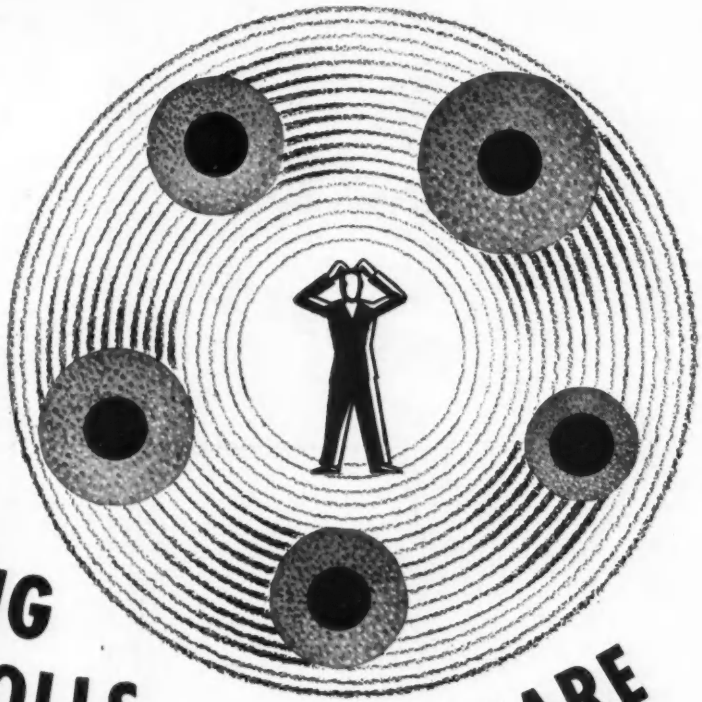
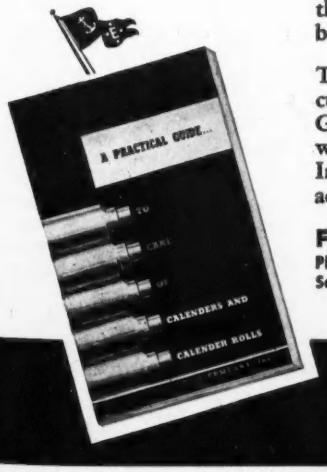


IN REGRINDING CALENDER ROLLS, SELECT THE WHEEL WITH CARE

When grinding rolls of a variety of materials, it is desirable to use a wheel of a different type and hardness of bond, grit size and so on for each kind of roll. However, as this calls for a large inventory of wheels and much time in making changes, it is common practice to select a general-purpose wheel which will give reasonably satisfactory results on all rolls.

In selecting such a wheel two factors are taken into consideration: (1) the quality of finish required on chilled iron rolls, and (2) the loading of the wheel when grinding rubber-covered rolls. Probably the best solution is to choose the coarsest grit wheel that can possibly be used and still give a satisfactory finish on chilled iron.

It is advantageous to use a special wheel for each kind of roll where modern machines with overhung wheels permit quick wheel change, or where there is sufficient grinding of each kind of roll to warrant the time expended in changing the wheels of older type machines which have the wheels mounted between the bearings.



This is only one of the problems involved in roll grinding. For a further discussion of this subject, write for a copy of our 32-page booklet, "A PRACTICAL GUIDE TO CARE OF CALENDERS AND CALENDER ROLLS." Your copy will be sent to you free of charge, and you won't be under any obligation. Information applies to any make of calender, roll or roll grinder. Contains no advertising.

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G. H. Corbin Goes to Minneapolis

The Pennsylvania Salt Manufacturing Company announces the appointment as of May 6 of Gilbert H. Corbin, formerly field sales maanger of its Laundry and Dry Cleaning Division, to be district sales manager in charge of the company's Minneapolis office. Mr. Corbin has been associated with the company's Laundry and Dry Cleaning Division since it was established in 1940, following the purchase of the Sterling Products Company. He had been associated with the latter company for about thirteen years. The company believes that Mr. Corbin's transfer to the

GILBERT H. CORBIN

Heavy Chemical Division will place the Minneapolis office in charge of a man who will ably carry on the splendid work which Thomas M. Gillespie has done in the Wisconsin territory during the past thirteen years. Tom Gillespie leaves the company to establish his own business as a manufacturers' agent serving the pulp and paper industry with best wishes for his success from his former associates.

du Pont Develops New Adhesive

[FROM OUR REGULAR CORRESPONDENT]

WILMINGTON, Del., May 15, 1944—E. I. du Pont de Nemours & Co., which last August introduced adhesive "77" for the production of weather-proof paperboard shipping containers that stood up under the Army practice of floating materials into beachheads, has developed a companion adhesive that reduces the box-maker's operative costs.

Produced in the laboratories of the Grasselli Chemicals Department, the new adhesive—listed as Du Pont adhesive "78"—contains all of the qualities of the water-soluble vinyl resin "glue" introduced last year. Board made with the new adhesive meets the rigid government specifications for weatherproof shipping containers.

Containers utilizing either adhesive can be fashioned on standard box-board machinery which may be operated at full speed without any special equipment. Both "77" and "78" adhesives are stable, dry white powders that can be simply prepared in standard mixing equipment.

1 ONCE A PRIVATE FROM PAGE 8
LOUSED UP A TOP SERGEANT'S DATE
ON PAGE 7. "FOR SHOWING THROUGH,"
THE SERGEANT SAID, "K.P. FOR YOU!"

2 "BUT LOOKIT, SARGE," THE PRIVATE CRIED,
"IT'S A MISTAKE—I'M MORTIFIED!
I DIDN'T COME HERE PURPOSELY—
THE PAPER'S NOT OPAQUE, YOU SEE!"

3 THEN CAME A KINDLY PAPER MAN
WHO STRAIGHTWAY IN THE STOCK BEGAN
TO PUT "TI-PURE"—AND, SHOW-THROUGH CURBED,
LEFT SARGE AND GIRL FRIEND UNDISTURBED!

Conclusion:

To keep printed matter from showing through, "Ti-Pure" pigments are the ones for you!

DU PONT "TI-PURE"

Titanium Dioxide

for opacity, whiteness and brightness

E. I. DU PONT DE NEMOURS & CO. (INC.), Pigments Dept., 1007 Market St., Wilmington, Del.

DU PONT
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BETTER THINGS FOR BETTER LIVING . . . *Through Chemistry*

Restrict Old Manila Rope

[FROM OUR REGULAR CORRESPONDENT]

WASHINGTON, D. C., May 15, 1944—As a means of preventing the diversion of old Manila rope from use in the manufacture of paper, members of the Manila Fibre and Old Manila Rope Industry Advisory Committee recommended that the War Production Board amend Order M-294 to restrict the use or sale of the limited supply of this essential material, David Graham, presiding officer at a recent meeting here, said last week.

The greatest danger to the paper industry was reported by Government officials to be the diversion of this Manila rope for reuse in ships' fenders, bumpers and cargo nets, and its conversion into twine. Manila fiber and old Manila rope, it was said, is used extensively in the manufacture of highly essential papers such as insulating, condenser and flour sack papers.

In view of the fact that present ceiling prices on old Manila rope as provided in Maximum Price Regulation 47 do not cover sales of old rope for reuse as rope, which includes its use in ships' fenders, etc., a profit incentive exists in selling it for purposes other than the manufacture of paper, members of the industry said. Sales of old rope for reuse as rope at all levels except the consumer level are not subject to price control. These sales to consumers, however, are subject to the General Maximum Price Regulation. It was recommended that the Office of Price Administration be asked to revise its price schedule so that the maximum price regulation would cover all uses of this material.

National's New Labs.

The illustrations presented herewith show the three main units of the extensive new laboratories of the National Starch Products Company at 270 Madison avenue, New York. At the same location, but not pictured, are their Textile, Resyn Adhesives, and Training laboratories, as well as small capacity pilot plants for both Adhesives and Starch Divisions.

(Above) Technical Service Laboratory

(Right) Development Laboratory

(Above) Research Laboratory

SHOWING ULTRA MODERN FACILITIES

These ultra-modern facilities, plus a fully equipped food kitchen for experimental work on edible starches, occupy the entire tenth floor of the modern steel and concrete building on the northwest corner of 39th street. National's general and eastern sales offices occupy the ninth floor of the same location.

The laboratory installations are brand-new, and a great deal of additional testing equipment representing the latest design is in evidence throughout. Thus National has the facilities to service the exacting requirements of war industries and is prepared to solve the many adhesive and starch problems involved in postwar planning and reconversion.

SAVE WITH AN ENGINEERED READING CRANE AT STANDARD PRICES

If you have an unusual or particularly difficult materials handling problem, you can get a "custom built" Reading crane for the job at standard prices. This is made possible by the simple unit design which gives a high degree of flexibility to meet special conditions with standard equipment. Hoisting speed, trolley speed, length of span, length of lift can all be readily adjusted to meet your special needs... all without any sacrifice of the accessibility of operating parts and ease of maintenance.

For full information on how Reading cranes can be engineered to fit your needs write for the bulletin, "The Why and How of Faster Production."

READING CHAIN HOISTS-ELECTRIC HOISTS OVERHEAD TRAVELING CRANES

READING CHAIN & BLOCK CORP. 2113 ADAMS ST., READING, PA.

New Mill for Venezuela

WASHINGTON, D. C., April 26, 1944—A new Venezuelan cardboard factory with an estimated annual capacity of 20,000 tons is expected to start operations sometime soon, according to a report received at the Department of Commerce. This new plant, a wholly owned subsidiary of a well known Caracas firm manufacturing finished paper products, occupies some 30,000 square meters in the town of Petare, State of Miranda, about 20 kilometers from Caracas.

A Correction

The following items, "To Be Western Sales Manager" and "To Manage Phenol Plastics," revised are reprinted from the issue of the PAPER TRADE JOURNAL of May 11 to correct an error which presented a portrait of Sam Klein, western sales manager of the Calco Chemical Division of the American Cyanamid Company with the caption of Harry Kline, manager and technical director of Phenolic Plastics Division of Reichhold Chemicals, Inc.:-

To Be Western Sales Manager

The Calco Chemical Division of the American Cyanamid Company has named Sam Klein the organization's Western sales manager. Mr. Klein's appointment is effective May 1, at which date he will establish his offices in Chicago.

Employed in the dyestuff industry since 1907, Mr. Klein was with A. Klipstein & Co. and Read Holliday

SAM KLEIN

& Sons before joining Calco in February of 1917. For the past 20 years he has been in charge of Calco's Lake Department.

Mr. Klein was extremely active in the Community Chest and local civic organizations of Plainfield, N. J., where he resided from 1920 until 1938, at which time he removed to 500 West End avenue, New York City.

Mr. Klein has two sons, both of whom are in the armed forces. One is a member of the 8th Army Air Force and has been in England for two years. The other is serving in the Quartermaster Corps of the Navy.

To Manage Phenol Plastics

Henry H. Reichhold, founder, owner and chairman of the board of Reichhold Chemicals, Inc., Detroit, Mich., has announced that Harry Kline, who joined the RCI organization in January of 1943, was recently made manager and technical director of Phenolic Plastics Division.

Mr. Kline's department is concerned exclusively with phenolic plastic resins, phenolic laminating and impregnating "varnishes," molding compounds, phenolic resins for brake linings, phenolic resins for grinding wheels, phenolic resins for plywood and other adhesive purposes, phenolic casting resins and various other phenolic compounds and compositions, all of which are now being made and marketed by Reichhold Chemicals.

Prior to his affiliation with RCI, Mr. Kline spent nearly twenty years with the Bakelite Corporation, specializing in research and development work on phenolic resins and compounds.

To Start Big Expansion Program

Sale of the government dock in Powell River, B. C., to the Powell River Company, and immediate start of construction of a new, enlarged public wharf at Westview, three miles south, will be effected by Federal order-in-council, clearing the way for the Powell River Company to proceed with initial work on its $13,000,000 expansion program.

This announcement, received from Flt.-Lt. Jas. Sinclair, MP, from Ottawa, is virtually a "go-ahead" signal for the company to act on its huge development plans which have been at a standstill the past several weeks while the wharf issue, which developed into one of the most controversial subjects in Powell River's 34-year history, was settled.

Abandonment of the old government dock, which is located adjacent to the company's pulp and paper mill, was declared necessary to enable plant extension to the south, the only direction in which expansion is geographically possible.

While no official figure has been announced, it is reported that sale price of the dock to the Powell River Company is around $50,000.

E. C. Ekvall Joins Marty Paper Co.

The Marty Paper Company announces the appointment of Earl C. Ekvall to the office of director of sales and general manager of the Envelope Division.

Mr. Ekvall is carrying on a traditional name in the envelope industry, one which was established by Carl O. Ekvall, an uncle, who was a famous inventor of envelope machinery and founder of the General Paper Goods Manufacturing Company. After spending ten years working in close conjunction with his uncle in the above company, Earl started his own business under the trade name of E. C. Envelope Company which he conducted for the past four years.

The E. C. Envelope Company was dissolved as of May 1, 1944, to allow Mr. Ekvall to devote his undivided attention to the organization of an envelope division for the Marty Paper Company.

Apparatus for Water Analyses

A new 44 page booklet, profusely illustrated, presenting the various apparatus and chemicals which are used for Industrial Water Analyses for plant control, has just been issued by W. H. and L. D. Betz, Gillingham and Worth Streets, Philadelphia, 24, Pa. The book features the test sets required for such determinations as hardness, alkalinity, phosphate, sulfate, dissolved oxygen, pH value, silica, and others. In addition, numerous comparators, photometers, turbidimeters and so forth are displayed.

The book "Apparatus and Chemicals for Water Analyses" should be in the reference library of every Plant Chemist, Power Plant Executive, Operating Engineer, or any others who are interested in the conditioning of Industrial or Municipal water. The book will be sent free on request.

PAPER
TRADE JOURNAL
Title Reg. U. S. Pat. Off.
Henry J. Berger, Editor

COMING EVENTS IN PAPER INDUSTRY

New England Section. Technical Association of the Pulp and Paper Industry—Third Friday of each month at the Roger Smith Hotel, Holyoke, Mass.

Delaware Valley Section. Technical Association of the Pulp and Paper Industry—First Friday of each month at the Engineers Club, Philadelphia, Pa.

Lake States Section. Technical Association of the Pulp and Paper Industry—Second Tuesday of each month at the Conway Hotel, Appleton, Wis.

Kalamazoo Valley Section. Technical Association of the Pulp and Paper Industry—First Thursday of each month at the Park, American Hotel, Kalamazoo, Mich.

Chicago Professional Paper Group—First Monday of each month except July and August at Chicago, Ill.

American Pulp and Paper Mill Superintendents Association—25th Anniversary Convention, Edgewater Beach Hotel, Chicago, Ill., May 24, 25 and 26.

PULPWOOD

It is encouraging to hear that the campaign for a larger supply of pulpwood this year is making progress. Pulpwood receipts for the first two months of the current year increased 23% above the same period last year. More wood would have been produced but for the unfavorable weather in the southern areas. The lack of trucks has also been a deterrent factor in the past but this situation has improved. In discussing the pulpwood supply situation in detail, the Department of Commerce points out that the future Labor supply for the harvesting of pulpwood is dependent largely upon how many workers are withdrawn from the woods to serve in the Armed Forces. "Faced with the new Selective Service decisions affecting men under 26 years of age and progressive age categories afterwards, and in particular proposed changes in farmer deferments, pulpwood-cutting operations may in the near future have a reversal of the present more favorable trend. Conditions dictate the necessity of intensifying the use of prisoners of war, returning farmer workers to their jobs in the woods, obtaining the cooperation of farmers in continuing to cut as much pulpwood as possible, even during the early agricultural season, importing foreign labor and recruiting more Canadian woodsmen. It will only be through such positive measures that the forthcoming probable drain in woods labor can be met, and the all-important pulpwood be made available to fill future requirements of the expanding war needs for pulp and paper."

Commenting on last year's production of pulpwood the report states in part that, "January-February 1944 pulpwood receipts totaled 2,803,000 cords, compared with 2,277,000 cords in the like period in the previous year. Although the same number of mills are reporting, as a year ago, the low point in 1943 was due to heavy snows and bad weather generally affecting woods operations and trucking. Generally speaking, the current winter has been the most favorable in a decade, and a great deal of pulpwood moved in from Canada. . . . In December, 1943, domestic pulpwood receipts were about 1,186,000 cords, Canadian imports about 98,000 cords, totaling 1,284,000 cords; in January, 1944, domestic receipts were about 1,216,000 cords; Canadian imports about 123,000 cords, totaling 1,339,000 cords. Preliminary February figures show domestic receipts at 1,312,000 cords; Canadian imports 152,000 cords, totaling 1,464,000 cords. It is expected that total pulpwood receipts for March will approximate the level of the first two months and that the first-quarter receipts of 1944 will be considerably above those for the first quarter of last year. For the second quarter a decline under first-quarter pulpwood receipts can be anticipated. It is likely that the manpower shortage will become more acute during that period. Certainly farmers will begin their spring planting. The weather could also be a retarding factor."

In comparing the pulpwood supply situation this year with last year the following figures may be useful: Total receipts, including imports, for February, 1944, totaled 1,464,000 cords, compared with 1,179,000 cords for February 1943; total consumption for February, 1944, totaled 1,266,000 cords, compared with 1,193,000 cords for February, 1943, and inventories for February, 1944, totaled 3,029,000 cords, compared with 3,163,000 cords for February, 1943.

Estimates based upon the latest information from the Forest Products Bureau and the War Production Board, the Department of Commerce states, appears that wood receipts for the first quarter will total about 4,000,000 cords, compared with first quarter output of 3,461,000 cords in 1943. Receipts for the second 1944 quarter will approximate 3,600,000 cords, compared with 4,147,000 cords for the second 1943 quarter. "A number of factors are responsible for these anticipated increases," the Department of Commerce explains. "Among them may be included the establishment of war prisoner camps for woods operations, the provision of some relief with respect to the short supply of trucks and truck replacement parts, unusually favorable weather conditions in certain areas, and the successful outcome of efforts to stimulate pulpwood cutting on farm lots. The anticipated additional supply in the Southern region during the second quarter will come about partly as a result of January's ice storm in Texas which felled approximately 1,000,000 cords of pulpwood besides a large volume of saw timber. Work has started on reclaiming some of the felled timber from the storm. Some wood has been collected by the farmers, and a limited amount by companies purchasing and having interests in the section. Also, Government salvage operations started around the fourth week in March, with wood expected to move out of this section from this salvage operation around the first week in April. . . . To further assist in moving this felled timber while still usable, about 1,000 prisoners of war are expected to

begin salvage operations. One of these camps was in operation in April and seven more were under way last month. . . . "At present," the Department of Commerce states, "There are about 6,000 war prisoners cutting pulpwood through the United States, and this number will be gradually increased. . . . Of the war prisoners at present cutting pulpwood, the majority are German!"

In reporting that Canada has inaugurated pulpwood cutting on a year-round basis, the Department of Commerce states that it is quite possible that a similar procedure may be followed to a larger extent in the United States in order to obtain the fullest year-round utilization of labor, especially in the Lake and Northeastern regions.

L. R. Mathers Made Vice President

[FROM OUR REGULAR CORRESPONDENT]

BOSTON, Mass., May 15, 1944—At a meeting of the board of directors of the Century Paper Company, Inc., Lawrence R. Mathers was appointed a vice-president of the firm. Mr. Mathers is a native of Ohio and has spent many years in the paper trade in the Boston area. He has been specially active in the book paper field.

B. C. Pulp Co. Makes Repairs

Extensive repairs and improvements are now being carried out to the wharf and dock of the B. C. Pulp & Paper Company, Ltd., at its plant at Port Alice, B. C. Exact cost has not yet been determined, but it is expected the entire program may run to around $20,000.

Production Ratio Report*

(Production as per cent of six-day capacity)

COMPARATIVE WEEKLY SUMMARIES

Current Weeks—1944		Corresponding Weeks—1943	
April 1	88.0	April 3	88.6
April 8	88.2	April 10	89.9
April 15	86.7	April 17	89.3
April 22	91.3	April 24	89.7
April 29	90.9	May 1	85.8
May 6	*93.1*	May 8	90.6

COMPARATIVE MONTHLY SUMMARIES

Year	Jan.	Feb.	Mar.	Apr.	May	June	July
1943	87.2	88.9	89.5	88.7	91.4	84.8	84.3
1944	89.6	89.6	90.1	*89.5*			

Year	Aug.	Sept.	Oct.	Nov.	Dec.	Year Avg.
1943	91.0	88.3	89.6	89.6	82.0	87.8

COMPARATIVE YEARLY SUMMARIES

	1937	1938	1939	1940	1941	1942	1943	1944
Year to Date	89.6	67.5	80.2	85.5	91.3	102.5	88.7	*90.2*
Year Average	79.8	71.5	83.4	85.6	97.4	90.4	87.8	

* Based on tonnage reported to American Paper and Pulp Association. Does not include mills reporting to National Paperboard Association, except in isolated cases where both paper and paperboard are produced and separate tonnage figures are not readily available. Does not include mills producing newsprint exclusively.

PAPERBOARD OPERATING RATIOS†

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Year Avg.
1938	56	63	63	60	60	59	59	69	70	73	67	61	64
1939	65	73	76	74	69	73	68	77	82	91	88	77	77
1940	78	75	74	76	82	85	77	79	78	85	83	77	78
1941	81	88	89	89	91	94	92	98	95	99	98	90	92
1942	102	101	101	95	82	72	68	75	76	81	82	77	84
1943	86	88	94	94	96	94	89	96	94	94	93	87	93
1944	90	96	95	*96*									

Week ending April 1, 1944—93
Week ending April 8, 1944—94
Week ending April 15, 1944—92
Week ending April 22, 1944—98
Week ending April 29, 1944—98
Week ending May 6, 1944—*98*

† Per cents of operation based on "Inch-Hours" reported to the National Paperboard Assn.

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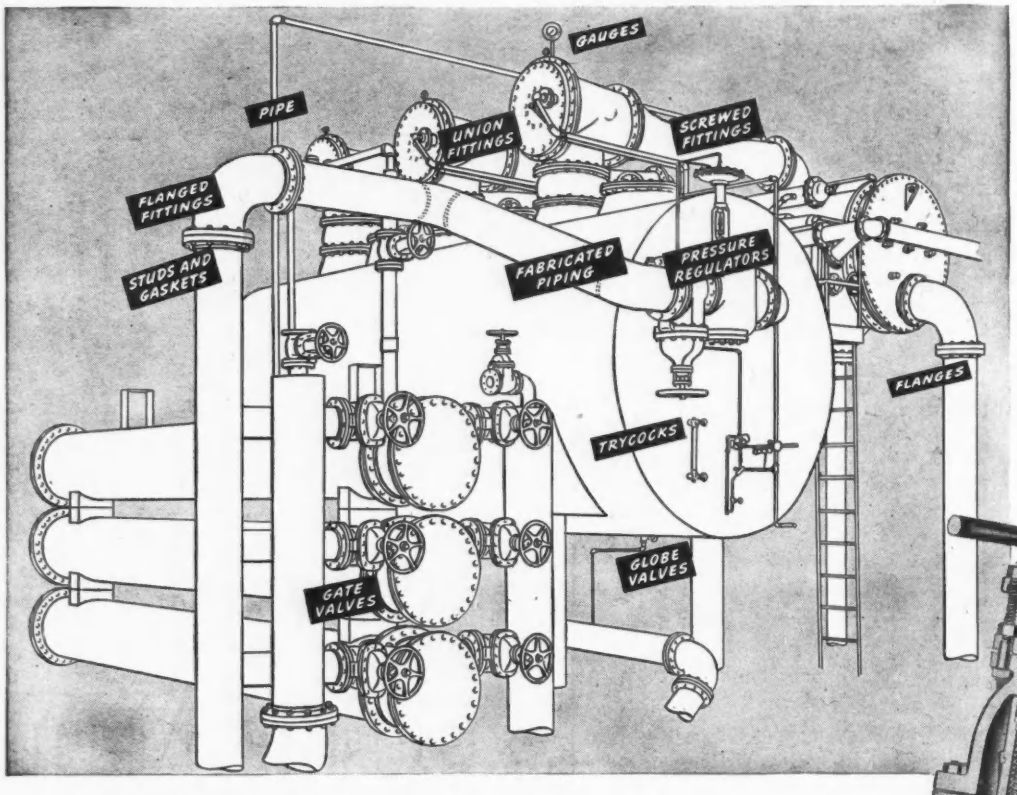

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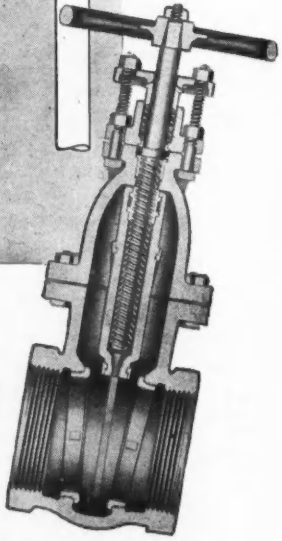
STANDARD IRON BODY WEDGE GATE VALVES



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Edited by R. G. Macdonald, Secretary

The Cupriethylenediamine Viscosity Method as a Control in the Manufacture of Pulp of Specified Viscosity*

By E. P. Wood[1]

Abstract

It was found that the cuprammonium viscosity test was not adequate for mill control so that the cupriethylenediamine method was adapted. This method has been used successfully; no details are given.

In the field of dissolving pulps, the cuprammonium viscosity of the finished pulp is a very important factor. Much work has been done to try to prove the value of this test as a further measure of pulp quality in the manufacture of the paper making grades of wood pulp.

The main obstacle to these investigations has been the time necessary to make viscosity determinations in order to reproduce results. In other words, before a test of this type could be adopted for control work it should be (1) accurate, (2) reasonably simple, (3) easily reproducable by different operators, and (4) speedy.

So-called rapid viscosity tests have appeared in the industry, but in attempting to use them, they were still found to require too much time, the degree of accuracy was not sufficient, and the results when checked against the results of the slower accurate methods made them absolutely useless for tests upon which operating variables could be successfully controlled.

However, like many control tests, as a specific case is the bleachability test cited, all was not in order in the beginning. The original bleachability tests, where hypochlorite was used, required several hours and results were more often confusing than enlightening.

When it became necessary to manufacture a type of pulp where very close viscosity specifications had to be met, there was found to be an immediate need for a quick, accurate, and dependable viscosity method which could be used by nontechnically trained personnel. Fortunately, sufficient work had been done so that certain things not to do were known, and a method was worked out by the research laboratory *(1)* for a streamlined viscosity test that could be used, being certain that it would give reliable results. The test was a modification of the Straus and Levy *(2)* method using cupriethylenediamine as a dispersing agent.

Use of Test

The test has been used regularly for over a year and a half on unbleached, semibleached, and full bleached pulp in both slush and dried form. The tests are being made by people without technical training. A single determination can be made by an experienced tester in 20 minutes and two samples run simultaneously require 22 minutes. Furthermore, the procedure has been set up so that individual testers check each other very closely. This test has the requirements desired for a control test as it is accurate, simple, reproducible, and quite short.

By use of this test, plant operation can be controlled within quite narrow limits. Results from a given digester can be obtained in sufficient time to make necessary adjustments in the cooking procedure on subsequent digesters. It has revealed irregularities in digester operation that did not show up in the bleachability test. It has even more possibilities in control of bleaching because of greater ease in obtaining representative samples than in the digesters.

Just what the full value of viscosity control will mean in the manufacture of the paper grades of pulp is yet to be determined, but it is believed this will give another measure of pulp quality which will be helpful in the production of pulp of higher quality and greater uniformity.

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1. Hatch, R. S., *Pacific Pulp Paper Ind.* 16, No. 10: 13 (Oct., 1942).
2. Straus, F. L., and Levy, R. M., *Paper Trade J.* 114, no. 3: 31-34 (Jan. 15, 1942).

* Presented at the Annual Meeting of the Technical Association of the Pulp & Paper Industry, Hotel Commodore, New York, N. Y., Feb. 14-17, 1944.

[1] Member TAPPI; Technical Director, Pulp Division, Weyerhaeuser Timber Co., Longview, Wash.

H. R. Hammer Head Virginia Academy

H. R. Hammer, director of research of the American Tobacco Company, was recently elected 23rd president of the Virginia Academy of Science. This is the first time an industrial scientist has been named head of this organization of 900 members. In 1943 Mr. Hammer was chairman of the Virginia Section of the American Chemical Society. Mr. Hammer is a member of the Technical Association of the Pulp and Paper Industry.

The Effect of Small Chips Sizes in Sulphate Pulping*

I. Effect of Chipper Fines

By K. G. Chesley[1] and N. F. Robertson[2]

Abstract

The effect of rejected chipper fines or the material commonly known as "sawdust" in sulphate pulping has been studied. Chipper fines were cooked alone and with chips in a small pilot digester. The total rejected chipper fines produced 80% of the yield obtained from chips. Relatively bark free chipper fines passing through ¼-inch screen and retained on ⅛-inch screen, when pulped alone, produced 93% of the yield obtained from chips. When pulped in mixtures with chips there was no noticeable difference in the calculated yield of the chipper fine portion from that obtained when pulped separately.

Laboratory beater tests indicate that a relatively slight lowering in strength properties would be expected from a small percentage of chipper fines in the charge.

The extra active alkali required for chipper fines was due entirely to the bark.

There is objection to the statement that "chipper fines consume chemical and contribute only debris to the pulp." Under some conditions in sulphate pulping, chipper fines may contribute an appreciable yield of pulp with only a negligible effect on the quality.

One of the major problems in each of the pulping processes is that of producing a uniform pulp. In common with all wood utilization industries the natural heterogeneity of wood makes this problem a difficult one. Consequently much effort is expended in obtaining a uniform raw material and in standardizing operations to produce a uniform product. It is known that chip size is one important variable. Chippers are commonly operated with two main objectives. The first is to produce the optimum amount of the most desirable chip size and the second is to produce as little "sawdust" or waste chipper fines as possible. This objective is made difficult of attainment because of the lack of data in the literature on the effects produced by and the relative value of the various chip sizes. This is particularly true for the sulphate process. Morgan and Dixon *(1)* have found that chip length is an important variable in the sulphite process. They found that short chips are overcooked before the longer ones have been pulped to a sufficient degree. In their tests the permanganate number varied from 6.4 for ½-inch chips to 20.9 for 1¼-inch chips when the penetration time was 1.5 hours and from 7.3 to 14.3 when the penetration time was 4.5 hours. On the other hand Cable, McKee and Simmons *(2)* have shown that when cooking aspen, birch and maple by the soda process the length of the chip between the limits of ½-inch and 1¼-inch has practically no influence on the yield, bleach required, or loss in weight on bleaching.

There is even less information on the effects and relative value of chips below ¼ inch in length or the fine material from the chipper which is normally removed by screening. The statement that "they consume chemical and contribute only debris to the pulp" is common. This is a misleading statement and contributes little to the understanding of the whole problem. There are many obvious reasons why the production of these chipper fines should be kept at a minimum. There is no reason to assume, however, that under no condition could the material have any value. Another point which is stressed repeatedly in the literature is the importance of uniformity of chip size *(3)*; although the fact that in some instances nonuniform chip size might be desirable to impart certain properties to the pulp *(4)* has been mentioned.

Much research remains to be done before any generalizations can be made on the effect of chip size variations in sulphate pulping. Such factors as wood species, cooking cycle, and chemical concentration will no doubt affect the results, so it is possible that results will vary for each mill operating under different conditions. The information should be of considerable value, however, in the design and operation of chippers and screens for optimum results under varying conditions.

This contribution is confined to a study of the effect of rejected chipper fines produced in one commercial plant operating normally on a mixture of about two thirds loblolly *(Pinus Taeda* L.) and one third shortleaf *(Pinus echinata* Mill.) pine. The term "chipper fines" is defined as the material coming from the chipper which will pass through a ¼-inch screen. "Retained chipper fines" is used to describe the material passing from the screens to the digesters which will pass through a ¼-inch screen, and "rejected chipper fines" the material rejected at the screens which passes through a ¼-inch screen. These terms are used instead of the customary term "sawdust" because it is believed that they more adequately describe the material. Then, too, there is some interest in the pulping of actual sawdust from sawmilling operations at the present time which necessitates a revision in terminology to prevent confusion.

This portion of the work is being presented at this time because of the interest in eliminating waste and producing the greatest amount of pulp from the available raw material. It is also hoped that it will stimulate interest in and encourage more work on the whole general subject of chip sizes.

Procedure

Sixteen batches of chips and nine samples of rejected chipper fines were taken from the mill supply over a 2 months period as needed. The chips were

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screened in the laboratory, using screens with 1-, ½-, ¼-, and ⅛-inch openings. Standard chip charges consisted of 79% chips through 1-inch on ½-inch screen, 18% through ½-inch on ¼-inch screen and 3% through ¼-inch on ⅛-inch screen. The moisture in the chips varied between 47 and 59%. All easily separated bark and knots were removed from the chips.

The rejected chipper fines normally going to the bark burners were screened through an ⅛-inch screen into two fractions. Digester charges containing rejected chipper fines, unless otherwise designated, were composed of 50% by weight of each fraction. Those retained on an ⅛-inch screen definitely had chip structure while the fraction passing through tended to approach actual sawdust. The bark averaged 7% in the fraction retained on the ⅛-inch screen. It was estimated to be 15% for the fraction through ⅛-inch. The moisture content of the chipper fines averaged about 50%.

The rejected chipper fines sample used in Series 7 containing a low per cent bark was obtained by hand picking the logs going to the chipper. This sample contained approximately 1.5% bark.

White and black liquor was taken from the mill supply as required. The white liquor was adjusted to give an activity of 85% and a sulphidity of 28% on an Na_2O basis as defined in TAPPI Standard 0 400 p-36. The black liquor was diluted to 8 Bé at 70° F.

A pilot digester equipped with an indirect heating and circulating system was used for the pulping experiments. Direct cooking conditions were approximated by injecting water to compensate for the steam condensed in direct cooking.

The pulped chips were blown into an elevated cyclone at full pressure, washed in a wooden washer box using fourdrinier wire and screened on a 0.032-cut screen. The pulp was then pressed in a cider press for moisture, yield and total yield determinations.

The chips and rejected chipper fines were cooked to approximately 30 and 20 TAPPI permanganate numbers by varying the per cent active alkali and by increasing the time at pressure.

The cooking conditions under which the chips and rejected chipper fines were cooked are as follows:

Digester charge ..... 4000 grams moisture-free basis
Liquor ratio ..... 3.33 to 1 (40 gal./100 lb. of chips)
Active alkali ..... 17.2 to 20.8%
Black liquor .....200 ml. (except when dilution prohibited)
Time to 212° F. (100° C.)..... 15 minutes
Time to 338° F. (170° C.)..... 75 minutes
Time at 338° F..... 60 minutes for 30 permanganate number pulp
120 minutes for 20 permanganate number pulp
Total cooking time.. 135 minutes for 30 permanganate number pulp
195 minutes for 20 permanganate number pulp
Water injection
2680 ml. or 67% basis moisture-free chips (0 to 55 min.)
720 ml. or 18% basis moisture-free chips (55 to 80 min.)
520 ml. or 13% basis moisture-free chips
80 to 135 min. for 30 permanganate number pulp)
680 ml. or 17% basis moisture-free chips
(80 to 195 min. for 20 permanganate number pulp)
Digester relief
160 ml. or 4% basis moisture-free chips at 212° F.
160 ml. or 4% basis moisture-free chips at 50 lb. pressure
80 ml. or 2% basis moisture-free chips at end of cook

Eight series of cooks were made:

No. 1—100% laboratory standard chips
No. 2— 25% rejected chipper fines mixed with 75% standard chips
No. 3— 50% rejected chipper fines with chips
No. 4—100% rejected chipper fines
No. 5—100% rejected chipper fines (retained on ⅛-inch screen only)
No. 6— 25% rejected chipper fines (on ⅛-inch screen only) with chips
No. 7—100% rejected chipper fines (on ⅛-inch screen only and containing low per cent bark)
No. 8— 25% bark (passing through ½-inch screen) with chips.

Three cooks each to permanganate numbers 30 and 20 were made in Series 1 and 4. Two cooks each to permanganate numbers 30 and 20 were made in Series 2, 3, 5 and 7. Two cooks to a permanganate number of 30 were made in Series 6. Two cooks to a permanganate number of 30 and one to 20 were made in Series 8.

Permanganate numbers were made according to TAPPI Standard 214 m-42, using 50 ml. $KMnO_4$.

A 1½-pound Valley beater was used to make the pulp strength tests as described in TAPPI Standard T 200 m-43, except for the following: a 6500 gram weight was used on the bed plate, and 1000 ml. samples were removed for testing at 5, 25, 45, and

TABLE I

Cook No.	Charge: Chips, %	Charge: Chipper Fines, %	Active Alkali (Na_2O), %	Cooking Time, hr.	Screened Yield, %	Total Yield, %	TAPPI Permanganate No.	Average Strength Characteristics of Pulp: Beating Time, min.	Freeness S.R., ml.	Bursting Strength, points/100 lb.	Tear Factor g./lb. ream wt.
SERIES NO. 1											
1	100		17.2	2.25	48.0	50.1	30.5	5	880	75	3.91
2			17.5	2.25	48.7	48.9	29.3	25	840	143	2.49
3			17.5	2.25	48.7	49.1	28.9	45	600	168	2.13
Av.			17.4	2.25	48.5	49.4	29.6	65	325	151	1.91
4	100		18.5	3.25	45.6	45.8	19.9	5	865	80	3.61
5			18.5	3.25	45.8	45.9	19.1	25	800	150	2.52
6			18.5	3.25	46.4	46.5	18.7	45	530	167	2.19
Av.			18.5	3.25	45.9	46.1	19.2	65	280	149	2.02
SERIES NO. 2											
7	75	25	17.2	2.25	44.6	46.7	32.2	5	870	74	3.05
8			17.7	2.25	47.2	47.6	30.5	25	800	137	2.25
Av.			17.5	2.25	45.9	47.2	31.4	45	510	157	1.86
								65	280	144	1.66
9	75	25	18.6	3.25	43.3	44.0	19.5	5	870	80	3.18
10			19.0	3.25	43.9	43.9	18.8	25	680	141	2.47
Av.			18.8	3.25	43.6	44.0	19.2	45	435	149	2.16
								65	240	133	1.94
SERIES NO. 3											
11	50	50	18.5	2.25	44.1	44.6	29.6	5	870	78	2.78
12			18.8	2.25	42.6	42.7	26.9	25	785	133	2.07
Av.			18.7	2.25	43.4	43.7	28.3	45	440	151	1.82
								65	270	136	1.79
13	50	50	20.0	3.25	39.1	39.3	18.5	5	850	85	2.41
14			19.8	3.25	41.6	41.6	19.1	25	650	137	1.91
Av.			19.9	3.25	40.4	40.5	18.8	45	360	143	1.65
								65	215	133	1.53
SERIES NO. 4											
15		100	17.2	2.25	42.2	42.2	42.2	5	830	62	2.08
16			19.2	2.25	38.6	38.6	30.2	25	565	99	1.66
17			19.4	2.25	40.6	40.6	27.8	45	310	110	1.40
Av.			18.6	2.25	40.5	40.5	33.4	65	205	116	1.21
18		100	20.8	3.25	36.5	36.5	21.5	5	830	69	1.77
19			20.0	3.25	37.0	37.0	20.2	25	550	97	1.48
20			20.5	3.25	35.6	35.6	19.2	45	290	104	1.21
Av.			20.4	3.25	36.4	36.4	20.3	65	190	109	1.09
SERIES NO. 5											
21		100[1]	17.5	2.25	45.5	45.5	32.5	5	860	66	2.20
22			17.7	2.25	44.2	44.2	29.6	25	670	111	1.81
Av.			17.6	2.25	44.9	44.9	31.1	45	350	126	1.48
								65	205	123	1.26
23		100[1]	18.6	3.25	41.7	41.7	21.0	5	855	64	2.11
24			18.8	3.25	41.8	41.8	22.7	25	650	112	1.84
Av.			18.7	3.25	41.8	41.8	21.9	45	330	120	1.56
								65	210	121	1.53
SERIES NO. 6											
25	75	25[1]	17.5	2.25	47.3	47.7	29.3	5	870	78	3.14
26			17.5	2.25	47.0	47.6	30.7	25	810	141	2.32
Av.			17.5	2.25	47.2	47.7	30.0	45	585	161	1.96
								65	300	151	1.84
SERIES NO. 7											
27		100[2]	17.2	2.25	45.0	45.0	27.2	5	860	58	2.49
28			16.9	2.25	46.0	46.0	29.9	25	755	110	2.08
Av.			17.1	2.25	45.5	45.5	28.6	45	385	127	1.78
								65	230	121	1.63
29		100[3]	18.1	3.25	42.8	42.8	19.6	5	870	62	2.11
30			17.9	3.25	43.5	43.5	21.4	25	715	112	1.91
Av.			18.0	3.25	43.2	43.2	20.5	45	355	124	1.63
								65	220	118	1.53
SERIES NO. 8											
31	75	25[3] bark	21.0	2.25	39.2	39.8	29.5	5	850	91	2.99
32			20.8	2.25	37.2	37.5	28.3	25	720	134	2.10
Av.			20.9	2.25	38.2	38.7	28.9	45	415	149	1.88
								65	235	140	1.77
33	75	25[3]	22.0	3.25	37.3	38.1	20.4	5	840	100	3.25
								25	650	154	2.42
								45	360	158	1.92
								65	225	143	1.82

[1] Retained on ⅛-inch screen only.
[2] Retained on ⅛-inch screen—1.5% bark.
[3] Passing through ½-inch screen.

65 minute intervals. The sample was not cleared before making the sheets. Five sheets for each interval were made on a 7¾-inch diameter Valley sheet machine, using a 100-mesh wire and were pressed according to TAPPI standards. The sheets were dried and conditioned at 50% R.H. and tested according to TAPPI Standard T 220 m-42, except that four tears on four sheets were made for the tear test. A basis weight of 25 by 40—500 was used.

Data on all the cooks are given in Table I.

Results and Discussion

In this work it was desired to obtain average results which could be expected under actual operating conditions rather than a high degree of reproducibility in the tests. To this end, samples of chips, chipper fines, and cooking liquors were taken from the mill supply as needed.

It will be noted in Table I that agreement of results was nevertheless satisfactory in cooks using chips. However, when using rejected chipper fines reproducibility was more difficult to obtain. In yield the maximum variation between cooks to the same permanganate number was less than 0.6% with chips and about double this with chipper fines.

In the graphical presentation, data for individual cooks as given in Table I are used to show the relationship of permanganate number to yield and active alkali. Averages of the cooks to 30 permanganate number in each series are used for presenting the physical strength data. Due to the inherent difficulties involved in translating laboratory pulp testing data to actual operating conditions no attempt is made to draw quantitative conclusions as to the effect of chipper fines on the strength characteristics. The data are presented graphically to show the trends. It should be noted that only one sample was used for cooks in Series 6 and 7, and therefore these results may not be truly representative.

Yield

It was found that throughout the range studied the total yield of pulp was a direct function of the percentage of chipper fines in the charge. It was also found that the total yield of pulp was a direct function of the permanganate number and that the constant expressing this function was the same for both chips and chipper fines. The yield of pulp obtained can be expressed in terms of the composition of the charge and bleachability of the pulp according to the following equation:

$$Y = 40.2 - 0.10\ F + 0.308\ P.N.$$

where

Y = Total yield in per cent oven dry pulp to oven dry wood.
F = Per cent rejected chipper fines in charge.
$P.N.$ = TAPPI permanganate number in or close to range 20 to 30.

The agreement of the experimental data with this equation is shown in Fig. 1. These results indicate that chipper fines produce the same yield whether cooked alone or with chips. Furthermore, the fact that the yield—permanganate number relationship is the same for chipper fines as for chips indicates that most of the bark in the chipper fines has been cooked out before the pulp reaches a permanganate number of 30.

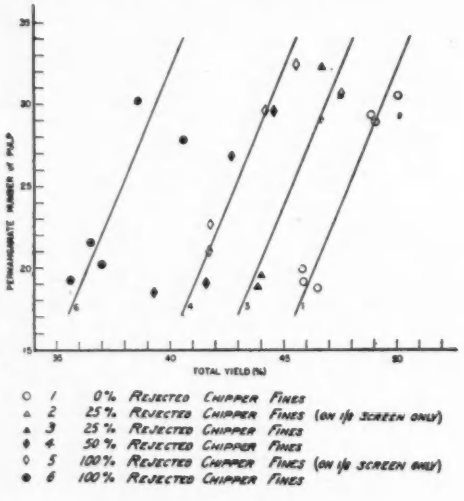
PERMANGANATE NUMBER of PULP
TOTAL YIELD (%)
○ 1 0% Rejected Chipper Fines
△ 2 25% Rejected Chipper Fines (on 1/8 screen only)
▲ 3 25% Rejected Chipper Fines
◆ 4 50% Rejected Chipper Fines
◇ 5 100% Rejected Chipper Fines (on 1/8 screen only)
● 6 100% Rejected Chipper Fines

Fig. 1
Effect of Rejected Chipper Fines on Permanganate Number and Per Cent Total Yield
— Y = 40.2 — 0.10F + 0.308 P.N.

Sheets made from the 1 gram samples of pulp used in the permanganate number determination showed that most of the so-called dirt in the fines had been removed at 30 permanganate number and completely at 20 permanganate number. The 25% bark cooks gave sheets that were quite dirty at 30 permanganate number. However, at 20 permanganate number they, too were practically dirt free.

The on ⅛-inch screen fraction of the rejected chipper fines lowered the yield only half as much as the whole chipper fines. Its yield can be more nearly expressed by the equation, Y equals 40.2 minus 0.05 F_1 plus 0.308 $P.N.$ The on ⅛-inch screen fraction sample containing only 1.5% bark gave an even higher yield. It should be noted that the equations given are only applicable to the raw material and cooking conditions investigated in this report. They are given only to show the relationship which exists between yield, permanganate number, and the raw materials under investigation and to indicate their usefulness in studies of this kind.

The total yield of exactly 30 permanganate number pulp given by the various chipper fines and the relation of this yield to that from chips is shown in Table II.

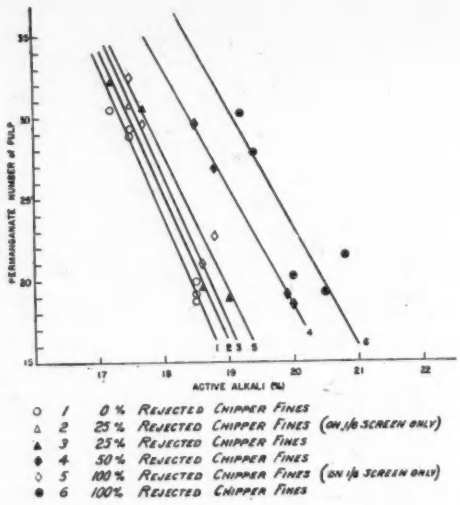
PERMANGANATE NUMBER of PULP
ACTIVE ALKALI (%)
○ 1 0% Rejected Chipper Fines
△ 2 25% Rejected Chipper Fines (on 1/8 screen only)
▲ 3 25% Rejected Chipper Fines
◆ 4 50% Rejected Chipper Fines
◇ 5 100% Rejected Chipper Fines (on 1/8 screen only)
● 6 100% Rejected Chipper Fines

Fig. 2
Effect of Rejected Chipper Fines on Permanganate—Per Cent Active Alkali Relationship

TABLE II

Charge	Yield of 30 Permanganate No. Pulp, %	% of Chip Yield
Chips	49.4	100
Rejected chipper fines—total	39.4	80
On ⅛-inch screen only (av. 7% bark)	44.4	90
Through ⅛-inch screen (calc. from above)	34.4	70
On ⅛-inch screen only (av. 1.5% bark)	46.0	93

ALKALI REQUIREMENTS:

The per cent active alkali required to cook the various chipper fines to the same permanganate numbers are shown in Fig. 2. About 10% more active alkali is needed for the rejected chipper fines and only about 2% more is needed for the fraction held on ⅛-inch screen. Less active alkali is needed to cook the same fraction of chipper fines containing 1.5% bark than regular chips. This proves that the added alkali required is due entirely to the bark.

The data obtained from Series 1, 5, 7 and 8 indicate that bark requires approximately 33% active alkali in pulping to 20 permanganate number as compared to 18.4% active alkali for chips. On this basis each per cent bark in the chipper fines requires 6.6 pounds of active alkali per ton of moisture-free wood. This is in agreement with the findings of Kress and Textor *(5)*.

STRENGTH CHARACTERISTICS:

The bursting strength, tear factor and freeness of the various pulps at 30 permanganate number are shown in Figs. 3, 4, and 5. It will be noted that after 45 minutes beating time the bursting strength of the pulp from rejected chipper fines was only 65% of that from chips. Indications are that this effect is not additive. The pulp made from 75% chips and 25% rejected fines retained 93% of the bursting strength. Pulp made from 75% chips and 25% of the on ⅛-inch screen fraction retained 96% of the bursting strength. After 45 minutes beating the percentage tearing strength loss was about the same as the bursting strength. However, in tearing strength the effect appears to be more nearly additive. Twenty-five per cent rejected chipper fines appears to lower the tearing strength one fourth as much as 100% rejected chipper fines. As would be expected the beating time required to reach any given freeness decreased as the average size of the chips decreased. Bark appears to have a detrimental effect on pulp strength as shown in Series 8, due possibly to the excess alkali used.

The physical strength results of the pulps cooked to 20 permanganate number in the different series were all slightly lower in respect to freeness than those cooked to 30 permanganate number. This decrease in

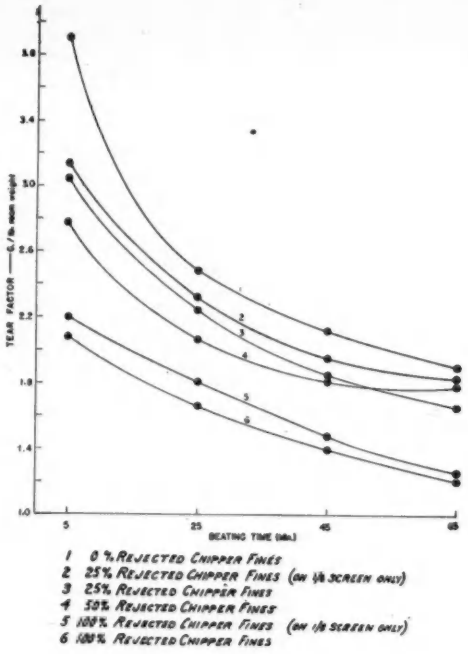
TEAR FACTOR
BEATING TIME (Min.)
1 0 % REJECTED CHIPPER FINES
2 25% REJECTED CHIPPER FINES (ON ⅛ SCREEN ONLY)
3 25% REJECTED CHIPPER FINES
4 50% REJECTED CHIPPER FINES
5 100% REJECTED CHIPPER FINES (ON ⅛ SCREEN ONLY)
6 100% REJECTED CHIPPER FINES

FIG. 4

Effect of Rejected Chipper Fines on Tearing Strength at Permanganate No. of 30

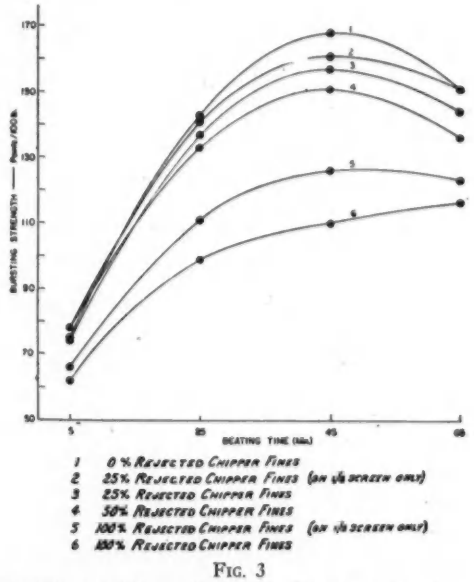
BURSTING STRENGTH
BEATING TIME (Min.)
1 0 % REJECTED CHIPPER FINES
2 25% REJECTED CHIPPER FINES (ON ⅛ SCREEN ONLY)
3 25% REJECTED CHIPPER FINES
4 50% REJECTED CHIPPER FINES
5 100% REJECTED CHIPPER FINES (ON ⅛ SCREEN ONLY)
6 100% REJECTED CHIPPER FINES

FIG. 3

Effect of Rejected Chipper Fines on Bursting Strength at Permanganate No. of 30

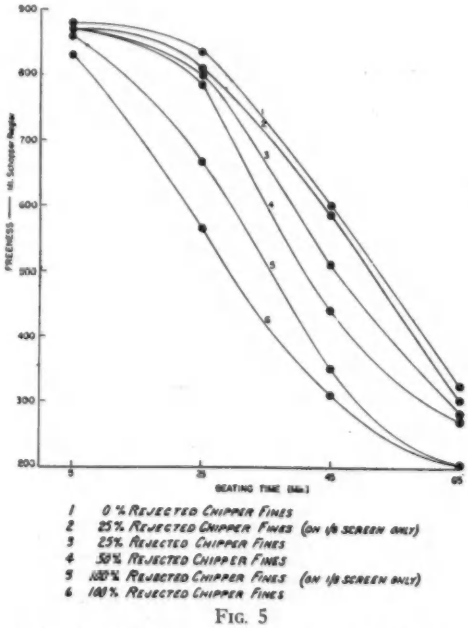
FREEDOM
BEATING TIME (Min.)
1 0 % REJECTED CHIPPER FINES
2 25% REJECTED CHIPPER FINES (ON ⅛ SCREEN ONLY)
3 25% REJECTED CHIPPER FINES
4 50% REJECTED CHIPPER FINES
5 100% REJECTED CHIPPER FINES (ON ⅛ SCREEN ONLY)
6 100% REJECTED CHIPPER FINES

FIG. 5

Effect of Rejected Chipper Fines on Freeness at Permanganate No. of 30

strength was in proportion to the increase in per cent rejected chipper fines in the pulp.

Summary

In the sulphate pulping of Southern pine, under the conditions investigated, it is concluded that rejected chipper fines passing through ¼-inch and retained on ⅛-inch screens and having 1.5% or less bark will produce approximately 93% as much pulp as ordinary mill chips.

Rejected chipper fines from one commercial operation, including all the material which will pass through a ¼-inch mesh screen, produced 80% as much pulp as ordinary chips.

There is no noticeable difference in the yield obtained from rejected chipper fines when pulped alone or in mixtures with regular chips.

The extra alkali needed to pulp chipper fines is due entirely to the bark in the fines. Bark-free rejected fines would consume no more alkali than chips alone.

Rejected chipper fines produced in good chipping operations with bark kept to a minimum should have a negligible effect on normal pulp strength and quality.

Literature Cited

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TAPPI Hudson Valley Group Meets

The Hudson Valley Group of the Empire State Section and local superintendents met at the Queensbury Hotel, Glens Falls, N. Y., on Friday evening, May 12. Foster P. Doane, Jr., of the Sandy Hill Iron and Brass Works, presided as chairman. About 60 attended. Brief remarks were made by V. P. Edwards, Frank McCourt and R. G. Macdonald.

The principal speaker was Walter G. Hendricks, manager and technical director of the Byron Weston Company, Dalton, Mass., who talked on Postwar Planning. Mr. Hendricks stressed, in particular, the value of employee suggestions relative to mill improvements. These should be catalogued carefully and referred to at frequent intervals, giving credit to any individuals whose suggestions lead to action. He pointed out the lack of job analysis in paper mills and outlined the success that his company has had in doing this. Such an analysis should go into great detail on every job, even such simple ones as sweepers, etc. Considerable attention should be given now to plans for utilizing the services of former employees released from military service. In many cases the experiences of these men should entitle them to better jobs than they previously held. Every mill should examine its equipment and processes critically to look ahead to more efficient operation. Attention should also be given to new fibers to use with wood pulp. Many of these fibers will be imported after the war and can contribute important properties to paper. He also read a report of a government representative who recently returned from Sweden. This indicated that the Swedish mills and resources are in excellent condition with 500,000 tons of chemical pulp ready for shipment as soon as the war is over. Mr. Hendrick's paper will be published at a later date.

Synthetic Resins and Rubbers

John Wiley & Sons have recently published a timely book by Paul O. Powers, Chief of Organic Research, Armstrong Cork Company, Lancaster, Pa. on Synthetic Resins and Rubbers (296 pp., 5½ x-8⅜, illustrated). The purpose of the book is to describe briefly the chemistry of polymers, particularly those of commercial importance, and their applications. Since the chemistry of these materials has not been previously covered in a single volume, this book offers a real convenience. Dr. K. H. Weber of the same company prepared the material on synthetic rubbers and A. S. Hussey of Ohio State University covered the subject on phenolic resins.

Among the subjects covered are: principles of resin formation, phenol aldehydes, ureas and melamines, polyesters and polyamides, polyvinyls, acrylates and methacrylates, polystyrene, hydrocarbon resins, cellulose nitrates, ethers and esters of organic acids, resins from rubber, solvents and plasticizers for synthetic resins and use of synthetic resins in protective coatings.

Since the materials referred to will become more and more associated with paper after the war, books such as this provide technical men with a good background for future work. Copies may be obtained from the Book Department of the Technical Association of the Pulp and Paper Industry, 122 E. 42nd street, New York 17, N. Y., at $3.00 per copy.

TAPPI Notes

Henry Reeves, Jr., is now smokeless powder supervisor for the Hercules Powder Company, Kenvil, N.J.

Harley E. Nelson, formerly of the Stein, Hall Manufacturing Company, is now superintendent for the French Paper Company, Niles, Mich.

W. Allan Schenk, founder of the Institute of Paper Chemistry, is now chemist for the A. P. W. Paper Company, Albany, N. Y.

W. B. Gery has succeeded C. L. Knowles as the representative of the Dorr Company in the Technical Association.

James P. Rubush, formerly with the Swenson Evaporator Company, is now vice president of the Goslin Birmingham Company, New York, N. Y.

The Technical Section of the Canadian Pulp and Paper Association will meet at the General Brock Hotel, Niagara Falls, Ont., June 15-17, 1944.

The Empire State Section of TAPPI will meet jointly with the New York-Canadian Div. of the Superintendents Association at the Hotel Woodruff, Watertown, N. Y., on June 23-24, 1944.

New Technical Bulletin on Waxes

Shortages of many mineral and vegetable waxes has caused manufacturers to turn increasingly to substitutes, replacements, and extenders. In order to provide a ready reference to these waxes, a new technical bulletin has just been issued, entitled, "Waxes for Today and Tomorrow."

This booklet lists thirty-six different kinds of waxes together with their specifications, and current prices. Thus it affords a ready reference for production men.

Copies of this booklet can be obtained free upon request from Distributing and Trading Company, 444 Madison avenue, New York 22.

Effect of Moisture on the Physical Properties of Paper Base Plastics*

By A. H. Croup[1]

Abstract

Papers impregnated with phenolic resin were conditioned at seven different relative humidities ranging from 9 to 94.5% prior to laminating. Tests on tensile, flexural, water absorption, dimensional stability, specific gravity and abrasion were made on the laminated material and correlated against the moisture content of the impregnated paper. In general, it was found that as the moisture content increased, the tensile and flexural strengths decreased, water absorption increased, dimensional stability became poorer, impact strength was slightly improved, and that specific gravity and abrasive resistance were unchanged.

If the paper base plastic is designed for structural purposes where strength and uniformity are of major importance, the moisture content of the impregnated paper should be carefully controlled.

Although tests have not been made on other strength properties as compression and shear or on any of the electrical properties, in view of the foregoing work, it is a reasonable assumption that moisture in the impregnated sheet will also affect these properties and should be investigated.

During the course of certain investigations on the adaptability and application of sulphite papers for laminating purposes, it has been found that the moisture content of the impregnated paper plays as important a part in the physical properties of the laminated plastic as does the moisture content of the plastic itself. Although paper has been used for years as a base in certain laminated products, little attention appears to have been paid to the effect of the moisture content in the impregnated sheet. There is practically no literature on the subject and none of the standard testing methods for paper base plastics, as A.S.T.M. Specifications, Federal Specifications for Organic Plastics, LP-406, or Bureau of Ships *ad interim* Specifications for Laminated Phenolic Material, refer to any humidity conditioning period for the paper, although conditioning requirements are specified for testing all types of plastic materials.

The results of this investigation are divided into two parts. Part A discusses the effect of the moisture content of the impregnated sheet on some of the physical properties of the laminated plastic. Part B discusses the effect of the moisture content of the laminated plastic on a few of its physical properties.*

Part A—Effect of Moisture in the Impregnated Sheet

Experimental Procedure

The base stock used for this group of experiments was a sulphite paper about 3 mils thick and was impregnated with a low pressure alcohol soluble phenol formaldehyde resin. About sixty sheets of the impregnated paper, sufficient to make a ⅛ inch thick panel when laminated, were conditioned in each of seven different humidity chambers until their moisture contents became constant. The relative humidities of the seven chambers were 9, 22, 32.5 52.5, 64, 81 and 94.5% and the temperature of the conditioning room was maintained constant at 22° C. The conditioning time varies somewhat with the sheet thickness and the resin content. A single sheet of this paper will absorb about 95% of its ultimate moisture content in about 24 hours, the rate of absorption following the usual expotential law. A booklet of say ten sheets of the same paper suspended by a clip at the corner or edge requires about 4 days to come into equilibrium with its surroundings.

Since the impregnated paper contains a certain amount of resin solvent as well as moisture, the moisture content was determined by the following procedure.

Sample sheets from each humidity chamber were weighed in a closed container immediately upon removal from the conditioning chamber. The sheets were then dried at 160° C. for 12 minutes and reweighed. The "per cent total volatile," i.e., solvent plus moisture, was calculated and plotted against relative humidity, (Fig. 1). Although the moisture content versus relative humidity curve for ordinary paper is usually of the sigmoid type, the data obtained in this investigation was insufficient to determine the exact nature of the curve for impregnated paper. For all practical purposes a straight line could be drawn through the points and this straight line was extended so as to cut the total volatile axis at 0% relative humidity. This intercept was interpreted as the per cent solvent volatile in the paper and the difference between the total volatile and the solvent volatile was assumed to be the moisture content of the sheet. This is shown in Fig. 1 by shifting the volatile axis from 0% to about 3.2% and obtaining a new zero for the moisture scale.

After conditioning, the papers were removed from their respective humidity chambers and immediately laminated into ⅛-inch panels in a hydraulic press at 160° C., 250 pounds per square inch pressure for 12 minutes. Tests were made for tensile, flexure, impact, abrasion, specific gravity, water absorption, and dimensional stability.**

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* Presented at the Annual Meeting of the Technical Association of the Pulp & Paper Industry, Hotel Commodore, New York, N. Y., Feb. 14-17, 1944.

[1] Member TAPPI; Physicist, Hammermill Paper Co., Erie, Pa.

* An impregnated sheet refers to a base material, as paper, cloth, fiber glass, etc., which has been treated with a thermosetting resin dissolved in a solvent, e.g., alcohol, and dried at the proper temperature which will reduce the volatile content of the solvent to the desired amount for satisfactory molding conditions. When a number of sheets of impregnated base stock are stacked together and molded under temperature and pressure, the resulting product is said to be laminated. If the base stock is paper the product is known as paper base laminated plastic.

** All tests, except those on abrasion, were carried out according to Federal Specifications for Organic Plastics, LP-406, Dec. 9, 1942. Abrasion tests were made on the Taber Abraser using testing wheels CS 17 under 1000 grams load.

Results

The average values of the results are given in Table I and curves showing the relationship between the physical properties of the laminate and the calculated moisture content of the impregnated sheet are reproduced in Figs. 2 and 3.

The moisture content of the impregnated paper appears to have little effect on the water absorption and the dimensional stability (change in dimensions due to water absorption) of the laminate up to about 4% moisture (approximately 50% R. H.), but as the moisture content increases above this value the material begins to absorb greater amounts of water with a consequent increase in swelling, Fig. 2.

Neither the abrasive resistance nor the specific gravity of the laminate appear to be affected by the moisture content of the impregnated paper.

However, as can be seen from an analysis of the curves in Fig. 3, the moisture content of the impregnated paper seriously affects the strength properties of the laminate.

The ultimate tensile strength, the modulus of rupture (flexure) and the moduli of elasticity in tensile and in flexure of the laminate appear to decrease lineally as the moisture content of the impregnated sheet increases. Assuming that these curves are linear,

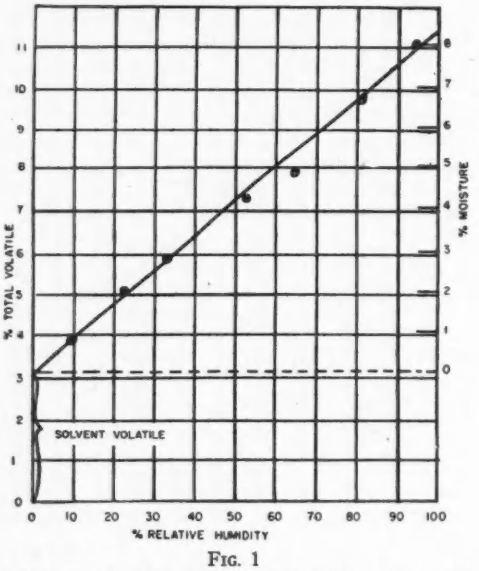


Fig. 1

Total Volatile, i.e., Solvent Volatile Plus Moisture vs. Relative Humidity for Impregnated Paper

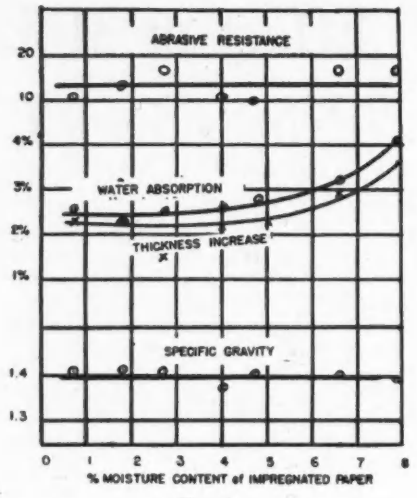


Fig. 2

Abrasive Resistance (mg. loss/1000 rev.), Water Absorption of a 2x2x¼ inch Sample after 24 hr. Immersion, Increase in Thickness Due to Water Absorption and Specific Gravity of the Laminated Plastic vs. Moisture Content of the Impregnated Paper

the extrapolated values at the extreme conditions of 0% moisture (0% relative humidity) and 8% moisture (about 95% relative humidity) show that the ultimate tensile strengths are about 34,500 p.s.i. and 22,000 p.s.i. respectively. Thus, a change from 0 to 100% relative humidity has produced about a 34% decrease in the tensile strength. Similarly, there is about a 46% decrease in the flexural strength from 0 to 100% relative humidity. The moduli show similar decreases. These, of course, are extreme limits not too likely to be encountered in commercial practice. In general, however, the strengths of the laminate vary by from 4% to 6% for each unit change in the per cent moisture content of the impregnated sheet.

The impact strength of the laminate is the only physical property of those investigated that shows an improvement with an increase in the moisture content. However, the material even at 100% relative humidity is still too brittle to warrant any recommendation that the impact strength of paper base laminated plastics can be improved by increasing the moisture content of the impregnated sheet at the expense of the other physical properties.

In Fig. 4 are shown tensile, impact, and water absorption curves for three other resin impregnated sulphite papers. The experimental procedure was the

TABLE I.—EFFECT OF THE MOISTURE CONTENT IN THE IMPREGNATED PAPER ON THE PHYSICAL PROPERTIES OF THE LAMINATED PRODUCT

Impregnated Paper			Laminated Material[1]								
	Content at time of laminating					Tensile		Flexure			
Conditioning Relative Humidity,	Total Volatile,	Moisture,[2]	Specific	Water absorption,[3]	Increase in Thickness,[4]	Ultimate	Modulus of Elasticity	Modulus of Rupture	Modulus of Elasticity	Edge Impact Izod Test ft. lb./in.	Abrasion[5] mg. loss per
%	%	%	Gravity	%	%	p.s.i.	p.s.i.×10⁶	p.s.i.	p.s.i.×10⁶	of notch	1000 rev.
9	3.9	0.7	1.41	2.58	2.32	33,000	4.0	33,000	1.78	0.64	11
22	5.1	1.8	1.41	2.38	2.28	31,800	3.1	28,900	1.57	0.66	14
32.5	5.9	2.7	1.41	2.46	1.51	30,600	3.2	26,800	1.54	0.70	17
52.3	7.3	4.0	1.37	2.60	2.25	27,500	2.9	26,100	1.89	0.74	11
64.5	7.9	4.7	1.40	2.82	2.27	26,400	2.8	23,500	...	0.78	10
81	9.8	6.6	1.40	3.18	2.92	24,000	2.7	20,000	1.01	0.82	17
94.5	11.1	7.9	1.39	4.13	3.60	22,700	2.0	17,900	0.79	0.99	17

[1] Parallel laminated at 250 p.s.i., 160° C., 12 min., ⅛ in. thick. Tests made parallel to grain and samples conditioned at 52% R.H., 22° C., for 48 hrs. according to Federal Specifications LP-406, Dec. 9, 1942.
[2] Determined as difference between total volatile and extrapolated value at 0% relative humidity. See text and Fig. 1.
[3] 24 hr. water immersion on a 2 in. x 2 in. x ⅛ in. sample.
[4] Change in thickness due to the water absorption.
[5] Made with Taber Abraser using CS 17 wheels under 1000 g. load.

same as that given above. The general slopes of these curves are in substantial agreement with the corresponding curves given in Figs. 2 and 3, and are reproduced to show that this phenomenon has been observed in more than one case. Two of these papers were commercially impregnated, the other was an experimental paper.

Moisture Control

If the end use of the paper base plastic is for structural purposes, then strength and uniformity in similar parts are of major importance. The results given above clearly indicate that the moisture content of the impregnated sheet should be carefully controlled. There are several places in the process between impregnating and laminating where moisture can enter the sheet. The first is just as the treated paper leaves the impregnating machine, where the paper is undoubtedly quite "dry" but also at a fairly high temperature. In many commercial machines, the paper on leaving the drying tunnel strikes a chilled plate or roll and if the relative humidity of the surroundings happens to be high, considerable moisture could reasonably condense out on the paper. Furthermore, this condensation could vary over wide limits with humidity fluctuations. After impregnating, most of the paper is wound in rolls so that if stored for any length of time the surface layers and ends of the rolls (unless protected with a moisture-proof wrapping) could undergo humidity fluctuations. Conceivably, then, a laminate from the center of the roll might be quite different in its physical characteristics from a laminate made from the surface layers. A further opportunity for moisture fluctuations to occur is after the paper has been cut into sheets and individual stacks are permitted to stand for any length of time, or if rolls have been stored at a relatively low temperature and then sheeted in a warm room before the rolls have attained room temperature.

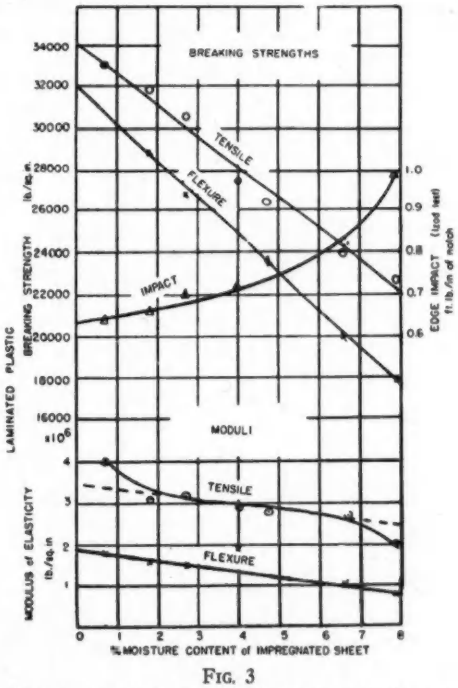


Fig. 3

Strength Properties of the Laminated Plastic vs. Moisture Content of the Impregnated Paper

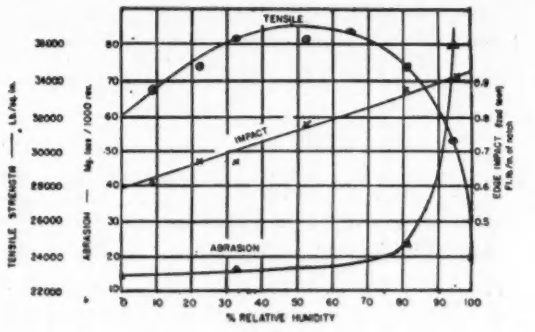


Fig. 5

Ultimate Tensile Strength, Impact Strength and Abrasion Resistance of the Plastic vs. Relative Humidity at Which Test Specimens Were Conditioned

TABLE II.—EFFECT OF THE MOISTURE CONTENT IN THE LAMINATED MATERIAL ON ITS PHYSICAL PROPERTIES

Conditioning [1] Relative Humidity of Laminate, %	Ultimate Tensile Strength, p.s.i.	Edge Impact Izod Test, ft.-lb./in. of notch	Abrasive Resistance, mgs. lost per 1000 rev.
(Desiccator)	32,200	..	14.1
9	33,600	.61	...
22	34,800	.67	...
32.5	36,400	.67	15.2
52.3	36,300	.78	...
64.5	36,800	.76	...
81	34,400	.88	24.2
94.5	30,700	.92	...
24 hr. water immersion	23,900	..	80.0

[1] Test samples conditioned for 48 hr. at 22° C.

Part B—Effect of Moisture in the Laminated Plastic

Preliminary investigations have shown that the moisture content of the laminated plastic has a profound influence on its strength properties.

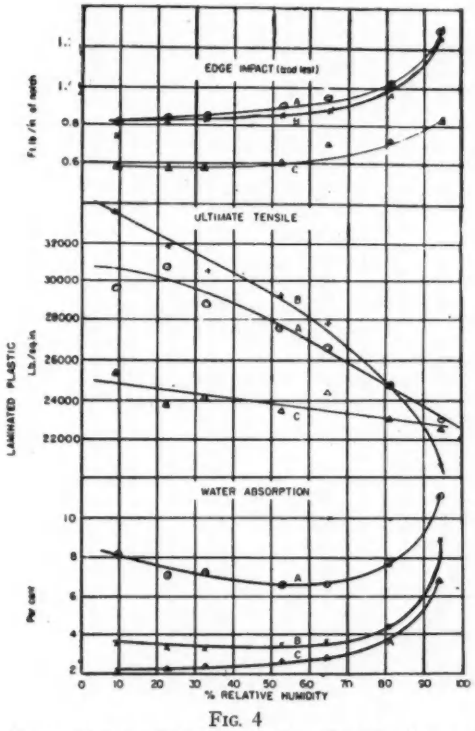


Fig. 4

Showing the Relation of Impact, Tensile and Water Absorption of the Laminated Plastic as a Function of the Relative Humidity at Which the Impregnated Paper Was Conditioned for Three Different Sulphite Papers A, B, C

In carrying out these experiments an impregnated paper was used whose moisture content was uniform throughout the stack. Panels ⅛ inch thick were parallel laminated at 160° C. and at 250 pounds per square inch pressure for 12 minutes. A sufficient number of test samples were cut from these panels so that at least three samples for each strength test could be conditioned in the various humidity chambers prior to testing. The conditioning time was 48 hours. It is now realized that this is not sufficient time to completely condition the entire sample to uniform moisture content. Therefore, the results given in Table II and Fig. 5 should only be interpreted as showing the trend to be expected. Recent data indicates that a period of about 3 months is necessary to completely condition the laminated material at the various humidities.

Of those properties investigated, impact is the only property which corresponds in its general character to that obtained in the preceding case. The tensile strength curve shows a maximum at about 50% R. H. (although there appears to be little change in strength between about 35% R. H. and 65% R. H.) and decreases at the lower and higher humidities. Abrasive resistance shows little variation with absorbed moisture up to about 50 to 60% relative humidity and then the resistance rapidly decreases as is shown by the rise in the loss in weight.

Since moisture in the impregnated sheet produces one effect on the strength properties and moisture in the laminated plastic produces another effect, it would be a reasonable assumption that the ultimate physical property of the laminate would be the result of the moisture effect of the one superposed on the moisture effect of the other. The exact nature of this combined effect remains to be investigated.

Conclusion

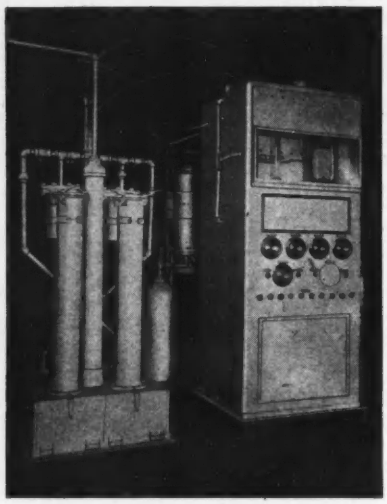
It has been shown that where paper base laminated plastics are to be used for structural purposes the moisture content of the impregnated paper should be as low as possible prior to laminating in order to obtain the greatest strength. Furthermore, it has been shown that the maximum strength in tension is obtained when the laminated plastic material is in equilibrium with a relative humidity of approximately 50%. The laminator could control the moisture content of the treated paper before laminating but the variations in strength of the laminated material would depend upon the conditions surrounding the material in actual use.

The results have been given without any attempt to explain the cause and effect and have been presented in the hope that it will add to the engineering data so necessary for structural purposes. The work has covered only a very small portion of the subject of the moisture effect in plastics. It is fully realized that other mechanical strengths, as compression and shear, are probably more important in structural work than tensile and flexural strengths but time and equipment have not permitted these tests to be carried out. Other lines of investigation might be: (1) the moisture effect on the strength properties of other base materials as kraft, rag and alpha papers, cloth and canvas, asbestos and wood flour, and even glass fibers; (2) the moisture effect when the various resins—phenolic, melamine, ureas, lignin, etc.—are used with different fillers, and; (3) the moisture effect on the electrical properties of those fillers and resins most commonly used for electrical insulations.

Chlorine Dioxide by New Process

Cleveland, Ohio, May 16, 1944—Chlorine dioxide, a bleach known to be two and one half times as powerful as chlorine, is now available for industrial purposes by means of a process developed by the Mathieson Alkali Works and described here today by E. R. Woodward at the meeting of the American Institute of Chemical Engineers.

Although chlorine dioxide has been known to chemistry for a long time, its use has been impractical because it does not keep, and therefore cannot be manufactured in bulk for shipment. The new process, according to Mr. Woodward, overcomes this difficulty by providing a safe, practical method by which the user prepares the bleach from chlorine and sodium



The Equipment

chlorite at the point, and in the quantity, required.

The equipment shown in the illustration consists of a two-tower generator and a cabinet, which houses control and measuring apparatus. The chlorine dioxide is generated by feeding chlorine and air into the towers which are filled with flaked commercial sodium chlorite.

Chlorine dioxide has already proved to have specific values in improving taste in public water supplies, checking blue mold in citrus fruits, and reducing spoilage in canned foods. On an experimental scale, sterilizing the atmosphere with chlorine dioxide increases the yield of penicillin.

In the maturing and bleaching of flour, chlorine dioxide has demonstrated its superiority over other chemicals, and it is expected to prove useful also for bleaching such products as starch, soap, paper and textiles.

Not to Sanction Strikes for Duration

[From our regular correspondent]

Fort Edward, N. Y., May 15, 1944—The executive board of the International Brotherhood of Pulp, Sulphite and Paper Mill Workers has reaffirmed the action agreed upon last year that sanctions would not be given any strikes while the war is in progress. Under the laws of the union a strike must be sanctioned by the executive board to be legal, according to John P. Burke, president. He stated that membership in the organization totaled 80,000 members.

SILENT AMBASSADORS

TREMENDOUS QUANTITIES of American goods are now being shipped overseas—to our Allies as well as to our own fighting forces. Because of wartime restrictions, the majority of these packaged goods are *silent* ambassadors of American cooperation and good-will. They are well packed, but inadequately labeled.

Probably this situation cannot be improved. However, we can gain—for the post-war period—a new perspective on the high value of adequate labeling, when insured and reinforced with the right kinds of adhesives for each particular labeling and sealing job.

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New York Paper and Pulp Market Review

Production and Demand For All Paper and Paper Board Products Continue Heavy—Exports of Wood Pulp Larger In Second Quarter — Rag Markets Active — Waste Paper Salvage 8% Under Goal.

Office of the PAPER TRADE JOURNAL,
Wednesday, May 17, 1944.

The current strong demand for paper and paper products indicates the essential character of the paper industry in its varied utility products required in the conduct of the war and for the home front to support the war effort. Reports from many manufacturers' representatives, jobbers, and general paper merchants this week, reflect the difficulty of satisfying customers' demands. How to overcome the manpower shortage is the major problem.

Although the trend in both paper and paper board output is upward, civilian supply of kraft paper and board is expected to become more and more limited as the requirements of the war increases the use of kraft products for packaging war materials of all kinds. As the production is limited by WPB directive, the only remedy appears to be in a higher output as current production is far below capacity. Second quarter production of kraft paper, all grades, is 2% higher than in 1943; wrapping papers are up 1%, and multi-wall sack paper up 46% over 1943. Paper board output is 5.6 higher, with tube stock showing an increase of 95.5%, while container board is up 5.9%, and set-up boxboard declined 14.9%.

Paper production for the week ended May 6 was estimated at 93.1%, compared with 90.6% for 1943, with 98.2% for 1942, with 99.1% for 1941, and with 88.6% for the corresponding week for 1940.

Paper board production for the week ended May 6 was 98.0%, compared with 96.0% for 1943, with 86.0% for 1942, with 84.0% for 1941, and with 74.0% for the corresponding week for 1940.

Wood Pulp

Wood pulp supplies in the first quarter, the Department of Commerce reports, totaled 90,000 tons above 1943. Exports, however, were 32,000 higher, and inventories at the end of March were 44,000 tons below January 1, 1944. Total inventories in March, 1944, were 3,135,000 tons. Second quarter allocations direct that, with the exception of mills producing sulphate pulp, they should withhold and ship as market pulp, a tonnage equivalent to 10% of their estimated production of wood pulp unless authorized to use more than 90% in manufacturing certain types of paper. Sulphate pulp producers are directed, the Department of Commerce reports, to withhold for shipment as market pulp, the difference between their estimated production and their authorized use for their own use, regardless of the 10% difference otherwise effective.

Rags

Demand for new cotton cuttings is active at this date, with mills buying in good volume. Prices are strong at ceiling levels.

The old cotton rag market is strong. Supplies of the roofing grades are still inadequate to meet mill demands. Prices are very firm.

Old Rope and Bagging

No important change in the old rope market has been reported this week. Demand for hard fibers is active. Prices are firm.

Trading in scrap bagging continues on a very limited scale. The market is slow on all grades of gunny and tares. All bagging prices continue nominal.

Old Waste Paper

Mill buying of waste paper continues active. Supplies are still reported under mill requirements. Prices are strong at ceiling levels.

Chairman Friendly of the U. S. Victory Waste Paper Campaign, reports that during March collections totaled 619,000 tons, or within 8% of the goal of 667,000 tons per month. Mill receipts for March totaled 619,000 tons, compared with 537,000 tons in 1943; consumption aggregated 609,000 tons, compared with 543,000 tons in 1943; inventories stood at 265,000 tons, compared with 498,000 tons in March, 1943.

Twine

Trade demand continues active for such grades of twine as are permitted for common uses. Prices are firm.

Encourage Container Re-Use

[FROM OUR REGULAR CORRESPONDENT]

WASHINGTON, D. C., May 17, 1944—To facilitate the container re-use program, essential because of the acute shortage of pulp for paper products, the Containers Division of the War Production Board today suggested that employers offer their employees nominal incentive payments for the return of shipping cartons.

Incentive payment programs should be particularly effective in the case of truck drivers, WPB said, as they can frequently empty cartons upon delivery of goods and return the cartons to the original user for further delivery service. Similar payments to other employees, who are in a position to aid in carton conservation, are also desirable, WPB said.

Small incentive payments per carton do not conflict with any War Labor Board ruling, WPB emphasized. William H. Davis, chairman of WLB, has stated that nominal incentive payments for the return of cartons do not call for specific WLB approval.

Gottesman & Co. To Be Sole Agents

Gottesman & Co., Inc., woodpulp agents, importers and exporters, 22 East 40th street, New York 16, N. Y., have been appointed sole selling agents for the groundwood pulp manufactured by the Halifax Power and Pulp Company, Ltd., Sheet Harbour, Halifax County, Nova Scotia.

Canadian interests recently acquired this mill from the A. P. W. Paper Company, Inc., Albany, N. Y. Halifax Power and Pulp Company, Ltd., produces approximately 25,000 tons of moist groundwood annually.

Gottesman & Co., Inc., are also selling agents for a number of other American, Canadian and Scandinavian woodpulp producers.

☆ Charles Goodyear's discovery, after long experimentation, of the secret of vulcanizing rubber transformed modern transportation. Yankee ingenuity won again. Call it research if you like. Lindsay desires by sincere effort to contribute materially to the improvement of Fourdrinier wire cloth and of the paper that is made from it.

THE LINDSAY WIRE WEAVING COMPANY
Serving the Paper Industry Since 1903
14001-14299 ASPINWALL AVE., CLEVELAND 10, OHIO

Lindsay **WIRES**
FOR PAPER MILLS

PRICE & PIERCE »»»»»»»ltd•

Wood Pulp & Paper Agents

60 East 42 Street
New York. N. Y.

Appleton Felts

MAKE GOOD PAPER

LOOK FOR THIS MARK of QUALITY ON FELTS ➡

IT is your assurance of service; that Appleton Felts are designed and manufactured with technical foresight as quality felts.

Today's standard for paper mill felts, Appleton Felts meet the high speed production requirements of mills. Since 1890 Appleton Felts have been keeping pace with paper making—that's why.

APPLETON WOOLEN MILLS
APPLETON·WISCONSIN

MISCELLANEOUS MARKETS

Office of the PAPER TRADE JOURNAL.
Wednesday, May 17, 1944.

BLANC FIXE—The market for blanc fixe continues to conform to prevailing quotations. Current demand fair. The pulp is currently quoted at $40 per ton, in barrels, at works; the powder is currently quoted at $60 per ton.

BLEACHING POWDER—Current demand is reported good. Supply situation reported satisfactory. Bleaching powder is currently quoted at from $2.50 to $3.10 per 100 pounds. All prices in car lots, in drums, f. o. b. works.

CASEIN—OPA maximum prices on processed acid-precipitated casein are as follows: 10,000 pounds or more, 25 cents per pound; 2,000 pounds, 24¼ cents per pound; less than 2,000 pounds, 24¾ cents per pound, f. o. b. shipping point.

CAUSTIC SODA—Supply situation continues rather tight, with production and demand reported heavy. Solid caustic soda is currently quoted at $2.30 per 100 pounds. The flake and ground are currently quoted at $2.70 per 100 pounds. All prices in car lots, in drums, f. o. b. works.

CHINA CLAY—Demand for some grades of china clay is reported moderate this week. Domestic filler clay is currently quoted at from $7.50 to $15 per ton; coating clay is quoted at from $12 to $22 per ton, at mines. Imported china clay is currently quoted at from $13 to $25 per long ton, ship side.

CHLORINE—No change in the market situation reported this week. Production and demand well balanced. Prices remain unchanged. Chlorine is quoted at $1.75 per 100 pounds, in single-unit tank cars, f. o. b. works.

ROSIN—Higher prices are quoted on some grades of rosin this week. "G" gum rosin is currently quoted at $4.75 per 100 pounds, in barrels, Savannah. "FF" wood rosin is currently quoted at $4.75 per 100 pounds, in barrels, New York. Seventy per cent gum rosin is currently offered at $5.02 per 100 pounds, f. o. b. works.

SALT CAKE—Demand reported moderate. Quotations on salt cake continue to remain unchanged. Domestic salt cake is currently quoted at $15 per ton, in bulk. Chrome cake is currently quoted at $16 per ton.

SODA ASH—Market requirements for soda ash is heavy. Supply tight. Prices continue unchanged. Prices on soda ash in car lots, per 100 pounds, are as follows: in bulk, $.90; in paper bags, $1.05; and in barrels, $1.35.

STARCH—Corn is reported coming into market in volume well below industrial needs and far below last year. Market still tight. Quotations continue unchanged. Pearl is currently quoted at $3.72 per 100 pounds. The powdered grade is currently quoted at $3.83 per 100 pounds. All prices f. o. b. Chicago.

SULPHITE OF ALUMINA—Market situation is reported satisfactory. Quotations unchanged. Prices on the commercial grades are quoted at from $1.15 to $1.25 per 100 pounds. The iron free is currently quoted at $2.35 per 100 pounds. All prices in car lots, in bags, f. o. b. works.

SULPHUR—Demand is reported steady for sulphur. Quotations on all grades continue unchanged. Annual contracts are currently quoted at $16 per long ton, f. o. b. mines. The current contract price at Gulf Ports remains unchanged at $17.50 per long ton.

TALC—The market for domestic talc is reported moderately active. Quotations unchanged. Domestic grades are quoted at from $16 to $21 per ton, at mines.

MARKET QUOTATIONS

All market quotations, excepting those otherwise designated as official OPA maximum prices, are based on the manufacturers' price level as of October 1-15, 1941; maximum wholesale prices are based on the merchants' maximum prices for stipulated quantities at a quoted price to all customers of a like class, as shown by the merchant's sales records of goods delivered during March, 1942. A merchant's price list in effect in March 1942, showing quotations of actual shipments, will establish the current maximum prices.

Paper

(Delivered New York)

Standard News, per ton—

Roll, contract...	*$58.00	—
Sheets	66.00 "	—

* OPA Maximum Price.

Kraft—per cwt.—Carload Quantities Zone A, f.o.b. Mill

Superstandard Wrapping	*$5.25	—
No. 1 Wrapping...	*5.00 "	—
Standard Wrapping	*4.75 "	—
Standard Bag.....	*4.375 "	—

* OPA Manufacturers' Prices.

Tissues—Per Ream—Carlots

White No. 1.....	1.12½ "	—
White No. 1 M. G.	1.10 "	—
White No. 1½....	1.00 "	—
White No. 2.....	.90 "	—
Anti-Tarnish M.F..	1.20 "	—
Colored	— "	—
Kraft	.95 "	—
Manila	.90 "	—

Toilet—1 M. Sheets—Per Case

Unbleached	4.25 "	—
Bleached	5.70 "	—
Unbl. Toilet, 1 M.	4.16 "	—
Bleached Toilet...	5.70 "	—

Paper Towels, Per Case—

Unbleached, Jr.....	2.20 "	—
Bleached, Jr.....	3.20 "	—

Manila—per cwt.—C. l. f. a.

No. 1 Jute.....11.25		—
No. 1 Manila Wrapping, 35 lb.....	6.00 "	6.25
No. 2 Manila Wrapping, 35 lb.....	5.75 "	6.00

Boards, per ton—

News	*48.00	—
Chip	*48.00	—
Sgl. Mla. Ll. Chip	*60.00 "	—
White Pat. Coated	*75.00 "	—
Kraft Liners 50 lb.	*63.00 "	—
Binders Boards....	84.00 "	116.00

* OPA Base Prices per 10 tons. Less than 10 tons but over 3 tons, add $2.50; three tons or less, add $5; regular 35-39 basis, add $5.; basis 40-49, add $2.50; basis 91-100, add $2.50; basis 101-120, add $5.

The following are representative of distributors' resale prices:

Rag Content Bonds and Ledgers—White, Assorted Items, Delivered in Zone 1:

	Bonds	Ledgers
100% Rag Ext. No. 1	$39.10@$46.00	$40.25@$47.25
100% Rag	32.20 " 37.75	33.35 " 39.25
85% Rag	.... "	29.90 " 35.00
75% Rag	23.00 " 27.00	24.15 " 28.25
65% Rag	.... "	22.80 " 27.75
50% Rag	18.70 " 22.75	19.90 " 24.25
25% Rag	16.40 " 20.00	17.55 " 21.50

Colors at $1.00 cwt. extra.

Sulphite Bonds and Ledgers—White, Assorted Items. Delivered in Zone 1:

	Bonds	Ledgers
No. 1..	$10.55@$12.75	$11.70@$14.25
No. 2..	9.65 " 11.75	10.80 " 13.25
No. 3..	9.20 " 11.25	10.35 " 12.50
No. 4..	8.90 " 10.75	10.05 " 12.25

Colors $1.00 cwt. extra.

Free Sheet Book Papers—White, Cased Papers. Delivered in Zone 1:

No. 1 Glossy Coated...	$13.65	@$15.30
No. 2 Glossy Coated...	12.40 "	14.00
No. 3 Glossy Coated...	11.60 "	13.25
No. 4 Glossy Coated...	11.15 "	12.75
No. 1 Antique (watermarked)	10.25 "	11.75
No. 2 Offset.....	9.60 "	11.00
A Grade E. F.....	9.35 "	10.75
A Grade S. & S. C....	9.60 "	11.00
B Grade E. F.....	8.85 "	10.25
B Grade S. & S. C....	9.10 "	10.50
C Grade E. F.....	8.55 "	9.75
C Grade S. & S. C....	8.80 "	10.00
D Grade E. F.....	8.25 "	9.50
D Grade S. & S. C....	8.50 "	9.75

Ivory & India at $.50 cwt. extra.

Wood Pulp

OPA Maximum Prices and Canadian Manufacturers Prices, Less Freight Not Exceeding OPA Allowances

Bl. Softwood Sulphite.....	$86.00
Unbl. Softwood Sulphite.....	74.00
Bl. Hardwood Sulphite.....	83.50
Unbl. Hardwood Sulphite.....	71.50
Bl. Mitscherlich	
Unbl. Mitscherlich ..	74.00 "
N. Bleached Sulphate.....	86.00
S. Bleached Sulphate.....	79.00
N. Semi-Bleached Sulphate...	84.00
S. Semi Bleached Sulphate....	79.00
N. Unbl. Sulphate.....	73.00
S. Unbl. Sulphate.....	63.50
Bl. Soda	72.00
Unbl. Soda	48.00
Groundwood	50.00

Transportation Allowances

Applying to Producers of Wet Wood Pulp.

	Below 50% Air Dry Weight
Northeast	$13.50
Lake Central	13.50
Southern	16.00
West Coast (in area).....	10.50
West Coast (out area).....	16.50

	50%-80% Air Dry Weight
Northeast	$11.50
Lake Central	11.50
Southern	14.00
West Coast (in area).....	9.50
West Coast (out area).....	15.50

Applying to Producers of Dry Wood Pulp.

	Above 80% Air Dry Weight
Northeast	$8.50
Lake Central	8.50
Southern	11.00
West Coast (in area).....	7.50
West Coast (out area).....	13.50

Should freight charges actually exceed these allowances, the difference may be added to the maximum prices

Domestic Rags

New Rags

(Prices to Mill f. o. b. N. Y.)

Shirt Cuttings—		
New White, No. 1..	6.50	@ 7.25*
Silesias No. 1.....	—	" 5.75*
New Unbleached...	6.75	" 7.50*
Blue Overall.....	—	" 5.00*
Fancy	—	" 3.50*
Washables	—	" 3.00*
Bleached Khaki Cuttings	—	" 4.25*
Unbleached Khaki Cuttings	—	" 3.00*

* OPA Maximum Prices.

YOU'RE GOING TO NEED PAPER CONVERTING MACHINERY

NOW IS THE TIME TO DISCUSS IT –

There's still a big job for all of us to do before Victory comes — but discuss today and be ready tomorrow. Early planning will help you do a better job when we can work in peace.

A LINE OF MACHINES YOU CAN DEPEND ON

PRINTING PRESSES
Rotary, Oil Ink, Aniline, Multi-color, Arc-type, In Series, Bag and Notion Envelope.

FOLDERS
Towel, Tissue, Napkin, Wax, Facial Tissue, Table Covers.

EMBOSSERS
1. Glassine. 2. Board. 3. Towel. 4. Tissue. 5. Napkin. 6. Wrapping. 7. Special Purpose.

WINDERS
Toilet, Towels, Crepe, Jumbo Roll.

CREPE MACHINE
Tissue, Kraft, Waterproof.

BUNDLING PRESSES
Adjustable, Napkin, Multi-Wall Bag.

MISCELLANEOUS
Toilet Roll Wrappers, Vacuum Pumps, Seat Cover Machines, Die Inkers, Core Machines, Core Recutters.

PAPER CONVERTING MACHINE CO.
GREEN BAY WISCONSIN
Manufacturers of paper converting machinery for all purposes.

KOSMOS · DIXIE PARIS BLACKS

Carbon blacks with a high degree of miscibility especially adapted to the needs of the paper industry. Supplied uncompressed, semi-compressed or in bead form.

BLAC-KING 45 RX

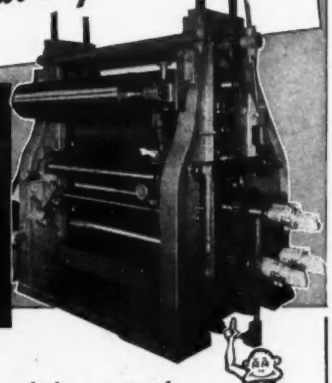
An aqueous dispersion of Carbon Black with a solid content of 45%. Especially designed for use as a coloring agent for paper. Clean to handle and eliminates contamination of other colors in the beater room.

Samples and information on request

UNITED CARBON COMPANY, Inc.
Charleston, W. Va.
New York • Akron • Chicago

new vertical design saves floor space

WALDRON Laminating Machine



For combining paper, cloth, paper and board, regenerated cellulose—this modern design Laminator applies any kind of adhesive smoothly. No troublesome "ribbing." Write today for full particulars to aid you in your post war planning.

JOHN WALDRON CORP.
Main Office and Works
New Brunswick, New Jersey
MACHINES

Kalamazoo GLAZED TILE

— The Finest Material for Paper Mill Needs —

Hundreds of paper mill executives and engineers know that Kalamazoo Tile construction costs less—lasts longer—controls stock better—requires less maintenance—and is more flexible as to size or design in meeting production layouts.

No other material equals the smooth, hard surface that is impervious to most chemicals—flushes clean—does not flake, pit or scale—and is free from friction.

Should fins—midfeathers—agitators—round—square or tapered ends, corners and bottoms be needed—the exclusive Kalamazoo method makes it easy to construct and moderate in cost, usually less than reinforced concrete.

Ask for engineering data.

Kalamazoo TANK & SILO CO.
KALAMAZOO - MICHIGAN

Old Rags

White, No. 1—			
Repacked	*3.80	"	—
Miscellaneous	*3.20	"	—
White, No. 2—			
Repacked	*2.90	"	—
Miscellaneous	*2.65	"	—
Third and Blues—			
Repacked	*2.20	"	—
Miscellaneous	*1.80	"	—
Roofing Rags—			
No. 1	*1.55	"	—
No. 2	*1.45	"	—
No. 3 (bagging)	*1.35	"	—
No. 4	*1.35	"	—
No. 5A	*1.35	"	—
Old Manila Rope	5.75	"	—

*PA Maximum Prices.

Foreign Rags

All Prices nominal

New Rags

New Dark Cuttings	2.25	@	2.40
New Mixed Cuttings	2.00	"	2.20
New Light Silesias	5.50	"	5.75
Light Flannelettes	5.50	"	5.75
New White Cuttings	7.00	"	7.50
New Light Oxfords	4.00	"	4.50
New Light Prints	3.00	"	3.25

Old Rags

No. 1 White Linens	7.50	"	8.50
No. 2 White Linens	6.50	"	7.50
No. 3 White Linens	4.50	"	—
No. 4 White Linens	2.25	"	3.25
No. 1 White Cotton	4.25	"	4.75
No. 2 White Cotton	3.25	"	3.75
No. 3 White Cotton	2.50	"	3.00
No. 4 White Cotton	1.90	"	2.20
Extra Light Prints	2.00	"	2.40
Ord. Light Prints	1.75	"	2.15
Med. Light Prints	1.55	"	1.95
Dutch Blue Cottons	2.25	"	2.50
French Blue Linens	3.00	"	—
Checks and Blues	2.00	"	—
Linsey Garments	1.90	"	2.00
Dark Cottons	1.50	"	1.60
Old Shopperies	1.30	"	1.45
New Shopperies	1.45	"	1.50
French Blues	2.25	"	2.50

BAGGING

(Prices to Mill, f. o. b. N. Y.)

Gunny No. 1—			
Foreign	Nominal		
Domestic	4.25	@	4.35
Wool Tares, light	4.25	"	4.50
Wool Tares heavy	4.50	"	5.00
Bright Bagging	4.50	"	4.85
Manila Rope—			
Foreign	—	"	—
Domestic	*5.75	"	—
Jute Threads	5.50	"	—
No. 1 Sisal Strings	*4.00	"	—
Mixed Strings	2.00	"	—

* OPA Maximum Price.

Old Waste Papers

(F. o. b. New York)

OPA Maximum Prices

No. 1 Hard White Envelope Cuts, one cut	3.37½	@	—
No. 1 Hard White Envelope Cuts	3.12½	"	—
No. 1 Hard White Shavings, unruled	2.87½	"	—
No. 1 Hard White Shavings, ruled	2.50	"	—
Soft White Shavings, one cut	2.87½	"	—
No. 1 Soft White Shavings	2.50	"	—
Soft White Shavings, Misc.	2.15	"	—
No. 1 Fly Leaf Shavings	1.67½	"	—
No. 2 Fly Leaf Shavings	1.12½	"	—
No. 1 Groundwood Fly Leaf Shavings	1.25	"	—
No. 2 Mixed Groundwood Fly Leaf Shavings	.90	"	—
Mixed Colored Shavings	.75	"	—
Mixed Groundwood Colored Shavings	.90	"	—
Overissue Magazines	1.67½	"	—
No. 1 Heavy Books & Magazines	1.67½	"	—
Mixed Books	.85	"	—
No. 1 White Ledger	2.17½	"	—
No. 2 Mixed Ledger, colored	1.87½	"	—
New Manila Envelope Cuttings, one cut	2.87½	"	—
New Manila Envelope Cuttings	2.65	"	—
Extra Manilas	1.85	"	—
Mixed Kraft, Env. & Bag Cuttings	2.75	"	—
Kraft Envelope Cuttings	3.25	"	—
Triple Sorted, No. 1 Brown Soft Kraft	2.50	"	—
New 100% Kraft Corrugated Cuttings	2.25	"	—
No. 1 Assorted Old Kraft	1.75	"	—
New Jute Corrugated Cuttings	.90	"	—
Old 100% Kraft Corrugated Containers	1.75	"	—
Old Corrugated Containers	1.15	"	—
Box Board Cuttings	.72½	"	—
White Blank News	1.65	"	—
Overissue News	.85	"	—
No. 1 News	.75	"	—
No. 1 Mixed Paper	.70	"	—
Old Corrugated Containers	.82½	"	—
Mill Wrappers	.85	"	—

Twines

All Prices Nominal

(F. o. b. Mill)

(Soft Fiber)

Coarse Polished—			
India	.21	@	—
White Hemp	.21	"	—
Fine Polished—			
Fine India	.26	"	—
Unpolished—			
Box	.17½	"	—
Paper Makers	.17	"	—
Tube Rope	.19	"	—
Wall Paper	.20½	"	—
Wrapping	.23	"	—
Soft Fiber Rope	.19	"	—
Cotton	.25	"	—

(Hard Fiber)

Medium Java	.18	"	—
Mex. Sisal	.16	"	—
Manila	—	"	—

PHILADELPHIA

Domestic Rags (New)

(Price to Mill.)

Shirt Cuttings—	
New White No. 1	.07¼
New White No. 2	.05¾
Light Silesias	.05¾
Black Silesias, soft	.03¾
New Unbleached	.07½
Washable Prints	.04¾
Washable No. 1	.03
Blue Overall	.05½
Cottons—According to grades—	
Washable shredding	.01¾
Fancy Percales	.04¾
New Black Soft	.03¼
Khaki Cuttings—	
Unbleachable Cotton Cuttings	.03½
Bleachable Cotton Cuttings	.04¼
Men's Corduroy	.03½
Ladies' Corduroy	.03
Cottonades	.03¼

Domestic Rags (Old)

White No. 1—Repacked	3.80	"	—
Miscellaneous No. 1	3.20	"	—
Miscellaneous No. 2	2.65	"	—
White No. 2—Repacked	2.90	"	—
Thirds and Blues—			
Miscellaneous	1.80	"	—
Repacked	2.20	"	—
Black Stockings—(Export)	Nominal		
Roofing Stock—			
Foreign No. 1	Nominal		
Domestic No. 1	1.55	"	—
Domestic No. 2	1.45	"	—
Roofing Bagging	1.35	"	—
Old Manila Rope	5.75	"	—

Bagging

(F. o. b. Phila.)

Gunny No. 1—			
Foreign	Nominal		
Domestic	3.00	"	3.50
No. 1 Clean bright—			
Sisal Strings			.04
No. 2 Clean bright—			
Sisal Strings			.03
Sisal Jute	.02½	"	.02¾
Scrap—			
No. 1	3.25	"	3.50
No. 2	1.75	"	1.80
Wool Tares	4.00	"	4.25
No. 1 New Light Burlap	3.00	"	4.00
New Burlap Cuttings	3.75	"	4.00

Old Papers

(F. o. b. Phila)

OPA Maximum Prices

No. 1 Hard White Envelope Cuts, one cut	3.37½	"	—
No. 1 Hard White Shavings, unruled	2.87½	"	—
Soft White Shavings, one cut	2.50	"	—
White Blank News	1.65	"	—
Soft White Shavings	2.50	"	—
Misc.	2.15	"	—
No. 1 White Ledger	2.17½	"	—
No. 2 Ledger, colored	1.87½	"	—
No. 1 Heavy Books & Magazines	1.67½	"	—
Overissue Magazines	1.67½	"	—
New Manila Envelope Cuttings	2.65	"	—
No. 1 Assorted Old Kraft	1.75	"	—
No. 1 Mixed Paper	.70	"	—
Box Board Cuttings	.72½	"	—
Ksaft Corrugated Cuttings	2.25	"	—
Old Corrugated Containers	1.15	"	—
Overissue News	.85	"	—
No. 1 News	1.00	"	—

BOSTON

Old Papers

(F. o. b. Boston)

OPA Maximum Prices

No. 1 Hard White Shavings, unruled	2.87½	@	—
No. 1 Hard White Shavings, ruled	2.50	"	—
Soft White Shavings, Misc.	2.15	"	—
No. 1 Fly Leaf Shavings	1.67½	"	—
No. 2 Fly Leaf Shavings	1.12½	"	—
No. 1 Groundwood Fly Leaf Shavings	1.25	"	—
No. 2 Groundwood Fly Leaf Shavings	.90	"	—
Mixed Colored Shavings	.75	"	—
New Manila Envelope Cuts, one cut	2.87½	"	—
Hard White Envelope Cuts, one cut	3.37½	"	—
Triple Sorted No. 1 Brown Soft Kraft	2.50	"	—
Mixed Kraft Env. & Bag Cuttings	2.75	"	—
Kraft Envelope Cuttings	3.25	"	—
No. 1 Heavy Books & Magazines	1.67½	"	—
New Manila Envelope Cuts, one cut	2.87½	"	—
New Manila Envelope Cuttings	2.65	"	—
White Blank News	1.65	"	—
No. 1 Assorted Old Kraft	1.75	"	—
No. 1 Mixed Paper	.70	"	—
Overissue News	.85	"	—
Box Board Cuttings	.72½	"	—
New Corrugated Cuttings, Kraft	2.25	"	—
Old 100% Kraft Corrugated Containers	1.75	"	—
Old Corrugated Containers	1.15	"	—
Jute Corrugated Cuttings	1.07½	"	—

Bagging

(F. o. b. Boston)

Gunny Bagging—			
Foreign	(nominal)		
Domestic	2.85	"	—
Sisal Rope No. 1	*4.75	"	—
Sisal Rope No. 2	*4.25	"	—
Mixed Rope	2.00	"	2.25
Transmission Rope—			
Foreign	(nominal)		
Domestic	2.75	"	3.00
Manila Rope—			
Foreign	(nominal)		
Domestic	5.75	"	—
Soft Jute Rope	5.25	"	—
Jute Cer. Threads	3.00	"	3.50
Bleachery Burlap	8.50	"	9.00
Scrap Burlap—			
Foreign	(nominal)		
Domestic	3.25	"	3.37½
Wool Tares—			
Foreign	(nominal)		
Domestic	4.25	"	—
Aust Wool Pouches	3.40	"	—
New Burlap Cuttings	4.75	"	5
Heavy Baling Bagging	4.00	"	4.2
Paper Mill Bagging	2.50	"	3.0
No. 2 Roofing Bagging	1.35	"	—

* OPA Maximum Price.

Domestic Rags (New)

(F. o. b. Boston)

Shirt Cuttings—			
New Light Prints	04½	@	04
Fancy Percales	04¼	"	0
New White No 1.	.06¼	"	0
New Light Flannelettes	.05½	"	0
Canton Flannels, Bleached	.06	"	0
Underwear Cutters, Bleached	06¼	"	0
Underwear Cutters, Unbleached	.05¼	"	0
Silesias No. 1	06	"	0
New Black Silesias	03	"	0
Red Cotton Cuttings	03½	"	0
Soft Unbleached	06½	"	0
Blue Cheviots	05½	"	0
Fancy	02¼	"	
Washable	02¼	"	
Khaki Cuttings	02¼	"	0
O. D. Khaki	03½	"	0
Corduroy	03¼	"	0
New Canvas	06¼	"	0
B. V. D. Cuttings	06¼	"	0

Domestic Rags (Old)

(F. o. b. Boston)

White No. 1—			
Repacked	3.80	@	—
Miscellaneous	3.20	"	—
White No. 2—			
Miscellaneous	2.65	"	—
Twos and Blues, Repacked	2.20	"	—
Old Blue Overalls	2.25	"	4.50
Thirds and Blues, Repacked	2.20	"	—
Miscellaneous	1.80	"	—
Black Stockings	3.50	"	4.00
Roofing Stock—			
No. 1	1.55	"	—
No. 2	1.45	"	—
No. 3	1.35	"	—
No. 4	1.35	"	—
No. 5, Quality A	1.35	"	—
Quality B	1.20	"	—
Quality C	.95	"	—
* Old Manila Rope	5.75	"	—

* OPA Maximum Prices

Foreign Rags

(F. o. b Boston)

Canvas	(nominal)
Dark Cottons	(nominal)
Dutch Blues	(nominal)
New Checks and Blues	(nominal)
Old Fustians	(nominal)
Old Linsey Garments	(nominal)
New Silesias	(nominal)

CHICAGO

Waste Paper

(F. o. b. Chicago)

OPA Maximum Prices

Shavings—			
No. 1 Hard White Envelope Cuts, one cut	3.37½	"	—
No. 1 Hard White Shavings, unruled	2.87½	"	—
No. 1 Soft White Shavings	2.50	"	—
No. 1 White Ledger	2.17½	"	—
No. 1 Heavy Books & Magazines	1.67½	"	—
White Blank News	1.65	"	—
Mixed Kraft Env. & Bag Cuttings	2.75	"	—
No. 1 Assorted Old Kraft	1.75	"	—
Overissue News	.85	"	—
No. 1 News	.75	"	—
No. 1 Mixed Paper	.70	"	—
No. 1 Roofing Rags	1.55	"	—
No. 1 Roofing Bags	1.45	"	—